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THE SIGNIFICANCE AND SURGICAL MANAGEMENT OF ULCERATING LESIONS OF THE STOMACH*

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The seriousness of cancer of the stomach cannot be overstated, since in the light of present knowledge it causes more deaths than cancer in any other single organ in the body. As Dr. Ochsner has shown, however, primary cancer of the lung is being recognized with greater frequency than ever before, and on the basis of the information that has been obtained from those who are particularly interested in this field, it is possible that primary cancer of the lung occurs as often, if not more frequently, than cancer of the stomach. It is also recognized that early removal of the malignant lesion is the only known method of cure. Unfortunately, in the majority of patients encountered by the surgeon, the disease is advanced too far to permit complete removal of the involved tissue and it is because of this fact that I wish to emphasize five points which may be of some benefit in the recognition of the lesion at a stage at which operative removal may be possible in a higher percentage of instances.

IMPORTANCE OF EARLY DIAGNOSIS

The importance of early diagnosis has been emphasized repeatedly. It is interesting, in reviewing the literature on cancer of the stomach published in the last thirty years, to note the many tests that have been advocated for the diagnosis of cancer of the stomach, many of which have been extremely ingenious in nature. A listing of the more important ones of these may be seen in table 1. With the advent of roentgenography and gastroscopy, most of the other methods of diagnosis of this particular disease have been abandoned with the exception, of course, of the interpretation of clinical symptoms and observations. Taking these various factors into consideration, it may be interesting to note the general trend that has occurred at The Mayo Clinic referable to the percentage of patients suffering from malignant neoplasms

TABLE 1

AIDS IN DIAGNOSING CANCER OF THE STOMACH, 1910 TO 1940

1. Interpretation of clinical symptoms and findings.
2. Digestive leukocytosis.
3. Specific proteolytic enzymes.
4. Lactobacillus of Boas-Oppler (Boas-Oppler bacillus).
5. Wolff-Junghans test.
6. Presence of lactic acid in gastric contents.
7. Einhorn's thread tests.
8. Anemia.
9. Concentration of hydrochloric acid in gastric contents.
10. Occult blood in stools.
11. Roentgenography.
12. Gastroscopy.
13. Intragastric photography.
14. Miscellaneous:
    a. Increase in serum nitrogen.
    b. Sugar tolerance tests.
    c. Urinary excretion of salt.
    d. Reflex esophageal spasm.

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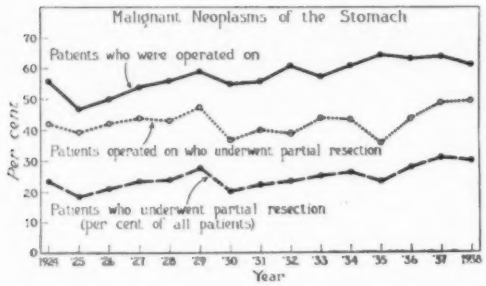

Fig. 1. Percentage of all patients who had malignant neoplasms of the stomach who were operated on, and percentage of all patients who underwent partial resection. Percentage of patients operated on who underwent partial resection, fifteen-year period, 1924 through 1937.

of the stomach who are operated on, and the percentage of these patients who were operated on who underwent partial resection of the stomach. As will be seen in figure 1, there has been a gradual increase during a period of fifteen years in the incidence of patients suffering from cancer of the stomach whose lesions were thought to be within operable limits and a corresponding increase in the percentage of patients who underwent partial resection of the stomach. The increase in the rate of resectability was accomplished without increase in the mortality rate, so that during the aforementioned relatively short period, at least 10 per cent more patients who had cancer of the stomach were operated on and of these the lesions of at least half were resectable.

In spite of this encouraging increase, however, the picture is a rather dismal one, for one cannot lose sight of the fact that of all patients suffering from cancer of the stomach now being encountered, in only approximately 25 per cent is the lesion resectable. The percentage of five year cures in this group (that is, patients whose lesions are resectable) has been reported variously from different clinics, but it would seem that from 25 to 30 per cent of the patients whose stomachs have been resected for cancer will be alive at the end of five years. If the fact is considered that only 25 per cent of those patients who have undergone resection will be alive at the end of five years, and that in only 25 per cent of all patients suffering from carcinoma of the stomach are the lesions resectable, approximately 6 per cent of all patients now being encountered suffering from cancer of the stomach will be alive at the end of five years. On the basis of these figures, it is obvious that the significance of the situation cannot be overstated.

The first point I should like to emphasize is the fact that there is no clinical syndrome characteristic of cancer of the stomach. Unfortunately, the tendency has been to wait until a rather characteristic symptom complex has been recognized before considering the possibility of presence of a malignant lesion of the stomach. This general tendency on the part of practicing physicians has been contributed to by the clinical picture of carcinoma that is being taught widely to the medical students at present. Unfortunately, the clinical picture is that of advanced carcinoma and if the utmost for the patient is to be accomplished, the disease must be recognized long before characteristic symptoms develop. The condition of two patients may be reported to illustrate the fact that a malignant or ulcerating lesion may be present and that no symptoms may be recognized by the patient.

CASE NO. 1

A minister, aged 67 years, registered at The Mayo Clinic on January 19, 1938, for the primary complaint of prostatic hypertrophy. He had experienced no gastrointestinal symptoms and at complete examination, the only observations of note other than symmetrical enlargement of the prostate gland were marked hypochromic anemia and occult blood which was noted in the patient's stools. On roentgenologic examination of the stomach for determination of the source of the blood in the stools, a malignant sessile polyp, approximately 7 cm. in diameter with ulceration and attachment to the middle third portion of the stomach, was noted (fig. 2a). On January 29, 1938, partial gastrectomy was done and gastrointestinal continuity was reestablished by means of posterior Polya type of anastomosis. Pathologic examination of the tissue removed revealed multiple gastric polyps, the largest 8 by 4 by 3.5 cm. In several of these polyps there was malignant change of a low grade (fig. 2b).

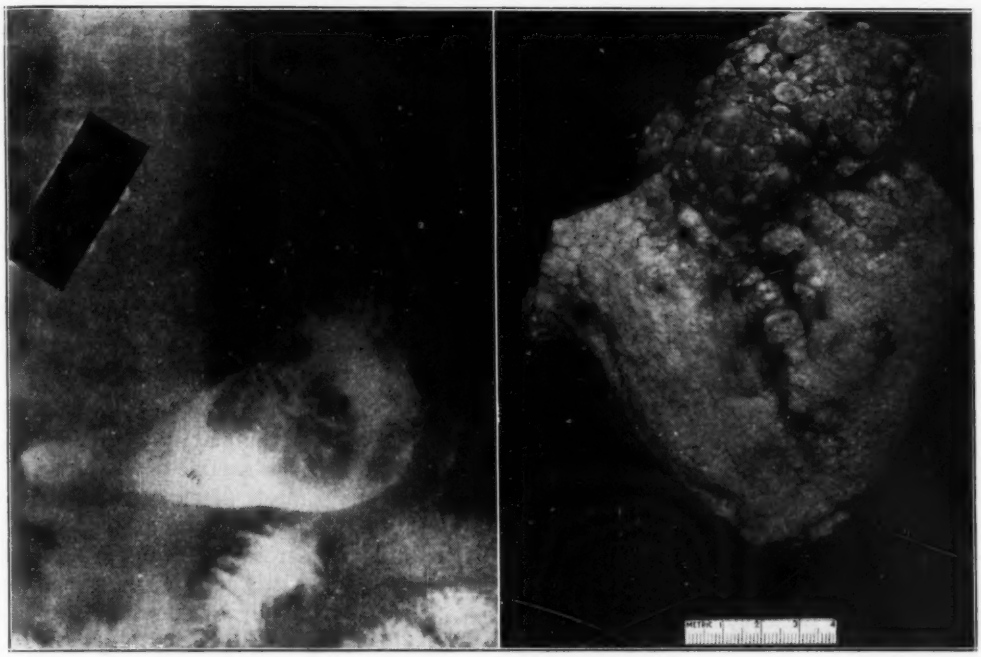

Fig. 2a. Roentgenogram showing a large sessile polyp in the stomach, with ulceration and attachment to the middle third part of the stomach; b, photograph of gross specimen of same lesion as shown in figure 2a, removed surgically; multiple gastric polyps were present, the largest being 8 by 4 by 3.5 cm.; several were malignant.

CASE NO. 2

A salesman, aged 54 years, registered at the clinic on December 16, 1939. In 1937 he had received therapy for syphilis of the central nervous system and he had returned for malarial therapy as advised. He had experienced no symptoms referable to the stomach, except that occasionally he had mild gaseous dyspepsia. While he was receiving malarial therapy (January 2, 1940) melena developed and the patient vomited blood on several occasions. When his condition had improved sufficiently to warrant roentgenologic examination, an operable ulcerating carcinoma on the posterior wall of the stomach at the level of the angle was discovered. Partial gastrectomy was performed on January 16, 1940 and gastrointestinal continuity was reestablished by means of a posterior Polya type of anastomosis. On pathologic examination this ulcerating lesion fortunately was found to be benign (fig. 3) and the patient was granted his surgical dismissal on February 8, 1940.

Fig. 3. Photograph of gross specimen removed surgically; benign gastric ulcer in syphilitic patient, diagnosed roentgenologically as ulcerating carcinoma.

DISCUSSION

The immediately foregoing case is included to emphasize not only the fact that an ulcerating lesion was present in the stomach without causing any symptoms, but also to illustrate the fact that it is impossible to ascertain, in many instances, from a roentgenologic standpoint whether an ulcerating lesion of the stomach is benign or malignant. In evaluating the condition of this patient, also, the possibility of a syphilitic gastric lesion had to be consid-

ered, but because of the presence of a lesion in the stomach in spite of prolonged antisyphilitic treatment, the possibility of a syphilitic lesion was minimal.

PERSISTENCE OF SYMPTOMS

I am impressed by the frequency with which persistence of symptoms, referable to the stomach over a long period as originating from a malignant lesion of the stomach, is disregarded. In a review of the clinical histories of a large number of patients who had cancer of the stomach, I[1] have been impressed by the high incidence of patients who had experienced symptoms referable to the stomach for a long time, in many instances for a period of many years. Approximately 35 per cent of patients in this group had experienced symptoms for a period of more than one year, and 10 per cent of patients had experienced symptoms for more than five years. Two types of symptom complex were noted; first, one in which symptoms referable to the stomach had been present without change for varying lengths of time and, second, one in which similar symptoms had been present for varying lengths of time, but in which the patients had experienced a change of symptoms within relatively recent time. The latter has been thought to be of diagnostic importance and undoubtedly should be considered with utmost seriousness. In about 50 per cent of patients the symptoms in almost every respect were similar to those experienced by patients who had benign ulcerating lesions of the stomach or duodenum. The discouraging observation was the fact that a very high percentage of these patients had been treated for an indefinite period without adequate roentgenologic or gastroscopic examination to determine the exact nature of the lesion, and in many instances it was not until the disease had progressed to an advanced stage that the undoubted diagnostic value of such an examination was afforded.

X-RAY EXAMINATION

As has been mentioned previously, in many instances it is impossible to determine definitely the exact nature of an ulcerating lesion of the stomach by means of roentgenologic examination. This point is well recognized by competent roentgenologists and even in expert hands it has been found that approximately 6 to 9 per cent of small ulcerating lesions of the stomach which have been diagnosed by means of roentgen rays as being benign will prove to be malignant when the lesion has been removed surgically. Because of this and also because of the fact that the gastroscopist also is often unable to ascertain the exact nature of a lesion, the malignant potentiality of a gastric ulcer must be considered in every case until its benignancy has been proved.

In the experience of clinicians of The Mayo Clinic, approximately 75 per cent of patients who have gastric ulcers are operated on immediately after the diagnosis of gastric ulcer has been established. For the remaining 25 per cent a rigid program of medical treatment is outlined and the lesion is checked repeatedly by means of roentgen rays at not longer than fortnightly intervals, until all evidence of the presence of an ulcerating lesion has disappeared from the stomach. The fact that the patient may improve clinically is not sufficient to deny the presence of cancer, for the inflammatory reaction associated with a malignant ulcer may subside under medical management while the malignant process may progress to the point of inoperability during the time the patient is under medical management. Although there are many diagnostic features of carcinomatous and benign gastric ulcers which may be of definite benefit on a percentile basis, it should be emphasized that these features are not at all constant and regardless of such considerations as the patient's age, the quantity of free hydrochloric acid in the gastric contents, the irregularity of the symptom complex, the roentgenologic appearance of the lesion and its situation, the lesion may be malignant.

It has been the general impression that an ulcerating lesion of the stomach which has shown improvement on roentgenologic examination by competent roentgenologists will prove to be benign, and not infrequently patients will be permitted to continue with such medical management for an indefinite

period uder the false impression that this improvement cannot be associated with a malignant lesion. To emphasize the fact that a malignant lesion may show definite improvement, a report of an illustrative case follows.

CASE NO. 3

A man, aged 61 years, registered for the first time at the clinic on November 1, 1937, complaining of cramping distress in the upper portion of the abdomen which occurred one to two hours after nearly every meal. This sensation had been present intermittently for many years, but during the few months prior to his registration, the distress had occurred more regularly and occasionally had awakened him at night. The pain always stopped when he ate. There had been no complicating features. Roentgenographic examination revealed a gastric ulcer about 1 cm. in diameter situated on the posterior gastric wall opposite the angle of the stomach. Total acids measured 16 units (Topfer's method) and there was no free hydrochloric acid in the first two specimens of gastric contents obtained after ingestion of fractional test meals. The patient promised to return in two weeks for a trial of medical treatment in the hospital and instructions were given him for care in the meantime. It was not until four months later that he reappeared (March 9, 1938) and he stated at that time that he had been feeling somewhat stronger. Occasional distress occurring between meals had been controlled by his taking milk, and for several weeks there had been no nocturnal pain. Roentgenographic examination on March 9, 1938 revealed a shallow, posterior crater on the site of the ulcer as the ulcer had appeared at the last examination of the patient. The gastric portion of ulceration appeared to be swollen. Gastroscopic examination showed a gastric ulcer measuring approximately 1 cm. in diameter, situated on the posterior wall of the stomach above the angle. There was some infiltration of the gastric wall above the ulcer, but from a gastroscopic standpoint the lesion appeared to be benign.

Because of his clinical and roentgenographic improvement, the patient was allowed to continue medical management with implicit instructions to return again in three to four weeks for reexamination. Again he failed to heed advice and he did not return until two years later, on April 1, 1940. His chief complaints at this time were dyspnea, faintness, and palpitations which were initiated by exertion. For six months prior to returning to the clinic he had experienced occasional episodes of nausea and vomiting associated with some amount of dull pain in the left side of the abdomen. Roentgenographic examination on April 1, 1940, revealed an ulcerating carcinoma situated in the middle third portion of the stomach. Total acids measured 28 units and free hydrochloric acid measured 18 units (Topfer's method). Operation was advised and was carried out on April 6, 1940, at which time partial gastrectomy and partial duodenectomy were done. On the greater curvature of the stomach 4 cm. above the pylorus was found a grade 2 ulcerative adenocarcinoma (8 by 8 by 4 cm.), with extensive involvement of the overlying serosa and extensive involvement of the regional lymph nodes along the greater curvature of the stomach. The pathologists could find no evidence of the previous existence of a chronic ulcer on the lesser curvature of the stomach. The patient experienced an uneventful convalescence and was granted his surgical dismissal on April 25, 1940.

Such a situation as that just described is not an infrequent occurrence, and in this particular instance the case is not an isolated one. Undoubtedly there are many artefacts which may result in a misinterpretation of the appearance of an ulcerating deformity in the stomach, but it has also been shown that malignant tumefaction which has originated in the edges of an ulcer may progress to a point at which the crater of the ulcer has been completely filled and cannot be recognized by means of roentgen rays.

CONCLUSIONS

May I emphasize again the important point that if any improvement is to be achieved in the rate of operability and of resectability for patients who have cancer of the stomach, it must be recognized: (1) That there is no symptom complex characteristic of cancer of the stomach, (2) that the possibility of presence of a malignant lesion of the stomach must be considered in any patient who has persistence of any symptoms referable to the stomach which do not respond immediately to ordinary measures, (3) the fact that a patient may have had symptoms for a long period is no assurance that a malignant lesion of the stomach is not present, (4) that in many instances it is impossible to ascertain the exact nature of a small ulcerating lesion of the stomach and that it should be considered malignant until its nature has been definitely proved otherwise and (5) that in spite of the fact that a small ulcerating lesion of the stomach may improve under the supervision of competent radiologists, the lesion still may be malignant.

REFERENCE

1. Gray, H. K.: The clinical and pathological factors influencing the ultimate prognosis following resection for carcinoma of the stomach, Ann. Surg., 97:882, 1933.

DISCUSSION

Dr. J. D. Rives (New Orleans): Dr. Gray's paper is a very excellent and timely one, for the subject of early treatment of cancer of the stomach is always timely. It is rather embarrassing, however, to discuss a paper by a member of The Mayo Clinic staff. The amount as well as the quality of their work makes it impossible for us to add very much to what they report. All that I can do is to supplement what Dr. Gray has said by giving you an idea of the results obtained in the rest of the country as compared to those at The Mayo Clinic.

Reports from the large general hospitals of the country show that the operability in the United States as a whole is less than 50 per cent, that is, if we apply the term "operable" only to those patients in whom all gross evidence of the disease can be completely removed. In some rural communities, as the reports of Foss show, this figure is as low as 5 per cent.

The operative mortality of gastric resection for cancer of the stomach in the large general hospitals in the United States is approximately 50 per cent. This extremely high mortality is due in part, of course, to a lack of skill in surgical management, but this is by no means the most important factor. To a large extent, it is due to the fact that patients with carcinoma of the stomach come to these surgeons, as they do to us in New Orleans, in such terrible condition that they stand operation very badly. If we take 100 hypothetical cases of carcinoma of the stomach and analyze their life expectancy on the basis of the reports which I have mentioned, we find that only two would be alive after five years. The maximum operability and the minimum operative mortality can be attained only by early recognition and early radical treatment of these patients while they are still in a satisfactory general condition. It is possible to attain an operative mortality of less than 10 per cent, as is demonstrated by the reports of the mortality of gastric resection for peptic ulcer.

The importance of the relation of carcinoma of the stomach to gastric ulcer lies in the fact that the highest curability of cancer of the stomach will necessarily be in those cases in which a diagnosis of a benign lesion has been made. Dr. Gray has emphasized the fact that there is no infallible method by which the clinician can determine whether or not a given gastric ulcer is malignant. I am sure that in the country as a whole the correct diagnosis is made less frequently than it is at The Mayo Clinic. Not only is it impossible to tell whether or not the lesion is malignant before operation, but it is also frequently impossible to do so at the time of operation. I once had the embarrassing experience of doing two gastric resections in one week in the first of which I concluded that the lesion was benign, whereas the pathologist found it was malignant, and in the second of which I concluded that the lesion was malignant, and the pathologist found that it was benign. This leads to the inevitable conclusion, which Dr. Gray has emphasized, that if an ulcer of the stomach is believed to be benign but does not heal completely after a brief period of adequate medical care, it should be treated surgically, and that the only proper surgical treatment of a gastric ulcer is resection of the stomach, carried out as if the lesion were known to be malignant.

Dr. Mims Gage (New Orleans):

I will make a few remarks concerning the ulcer itself. This is believed about cancer of the stomach—cancer of the stomach is similar to cancer of other mucous membranes because it is on the surface, primarily epithelial surface. There are very few carcinomas of the stomach infiltrating the wall. The fundamental factors that work in precipitation of development of benign peptic ulcers are present in carcinoma, destruction of mucous membrane. All of the classical activity that we find in a benign ulcer is present in the malignant ulcer. Therefore the symptoms of carcinoma, that is the early symptoms, would be the same as the early symptoms of peptic ulcer. Peptic ulcers or benign ulcer syndromes naturally have a tendency to improve. Not only do the clinical symptoms improve but the ulcer itself improves. Because the pathologic processes which are responsible for ulceration in peptic ulcer are also present in early carcinoma of the stomach, the ulcer heals.

That is one reason why patients treat themselves for a time at home and then go to an internist and he treats for ulcer and the patient gets relief. This goes on for a long period of time. A large number of individuals who have carcinoma investigated at the clinic have had symptoms for years. The only thing for us to do in cases of individuals past a certain age, who have had no previous gastric symptoms and begin to have symptoms, is to look upon them as malignant. All patients with peptic ulcer symptoms of benign ulcer lasting for over a period of years and start to have radical change, should immediately be suspected as carcinoma. That is the only possible way to increase the operability of carcinoma of the stomach.

I agree most heartily that we should use every possible method that we have at our disposal to make a diagnosis. The patient should not be treated over a long period of time because he improves. I am convinced that patients presenting themselves with a history and clinical manifestations of gastric ulcer should be operated upon immediately and have widespread gastrectomy.

I would like to say one word about syphilis and malignancy. Unfortunately I have knowledge of five cases of carcinoma of the stomach with symptoms of ulcer and at the same time positive Wassermann reaction. All improved and then died of

inoperable carcinoma of the stomach. Even though the surgeon is well founded in pathology it is almost impossible to make diagnosis in early cases.

Dr. Ochsner removed a stomach in an individual who had an ulcer that did not look right. The best thing in such cases is gastrectomy. He handed me the tissue and it had all the characteristics of benign ulcer. I said, "If that is carcinoma I will eat it." It did turn out to be carcinoma, although it had characteristics of benign ulcer.

Dr. A. L. Levin (New Orleans): Over a quarter of a century ago, Boas, the pioneer in gastrointestinal diseases laid stress on the significance of the constancy of occult blood as valuable evidence of malignancy in the gastrointestinal tract. The presence of occult blood in the gastric contents, in my opinion, is of greater value than the occult blood of the stool. On numerous occasions I have evaluated the Boas principle on cases of gastric ulcer versus gastric cancer. If a patient with gastric ulcer is being treated according to the best accepted methods and the occult blood of the gastric contents remains positive, I suspect malignancy and advise an exploratory operation. Boas went even further and stated that if a case of gastric ulcer has been relieved of all symptoms and the positive occult blood became negative, the patient should return regularly for occult blood tests. If and when the occult blood becomes positive again, exploration should be advised. I have followed this advice and was seldom disappointed.

This guide, together with gastroscopy and x-ray studies, should help in making an early correct diagnosis of malignancy in gastric lesions.

Dr. Gordon McHardy (New Orleans): I believe that the internist should accept the blame for the incidence of inoperability that the surgeon encounters in gastric carcinoma. I think the author and the discussing surgeons have spoken very conservatively and are very kind in not claiming exemption by accusation. The general practitioners, internists and gastroenterologists should be responsible for the surgeon getting patients at a sufficiently early stage that they may be operable and that, thereby, curability may be achieved. I think it is definitely established and it has been my observation that when a capable surgeon gets an operable case the patient recovers from gastrectomy in a favorable percentage of cases. If the case is early enough I think there is a good chance of curability. Therefore, there is very good reason why we should take the initiative in seeing that the general practitioners get cases early enough. We, who practice internal medicine or gastroenterology, should not avoid the issue and should bring them to the surgeon early in our failure and not procrastinate.

It is comforting to know that the gastroscopists at Mayo make errors as we do. After reading Schindler's book, after hearing him say that with the gastroscope one could make a statement definitely one way or another, I felt we had a relatively infallible procedure. We have disproved that to ourselves already. While it may be a means to early diagnosis this will be only if we see cases sufficiently early. It will not be of use to the surgeon unless it becomes a means to an early diagnosis for it cannot give criteria as to curability and its accuracy as to operability is only fair. I think probably the greatest value it has is to check treatment of gastric ulcer. We are aware that roentgenology is not sufficiently accurate to decide whether the ulcer has or has not healed. If a lesion does not heal gastroscopically under a careful medical regimen, then it becomes a surgical problem.

Hyperacidity in malignancy is another interesting point. Too frequently the presence of acidity indicates benignancy to the physician. Recently, Dr. Browne and I have adopted what might be considered a radical attitude in advocating surgery in all cases of medically incurable (after 6 weeks' therapy) gastroscopically benign ulcers and gastric polyps, whether single or multiple. We recently offered three cases which were of single benign polyps, pathologically benign. By so doing we hope that these patients have been prevented the possibility of subsequently dying of carcinoma of the stomach.

Dr. Gray (In closing): In order to impress upon us again the significance of malignant lesions of the stomach, we may review the figures as quoted. Of each 100 patients whom we have the opportunity of seeing at present, approximately 50 are considered to be inoperable and are sent home. Of the remaining fifty for whom surgical exploration is carried out, the lesions of approximately a half, or 25 per cent, of the original number of patients, will be resectable. To the best of our knowledge, approximately 30 per cent of those for whom resection of the stomach for a malignant lesion has been done will be alive at the end of five years. Consequently, it may be said, roughly, that one quarter of those patients who undergo resection, or one-sixteenth (approximately 6 per cent) of all patients we now see suffering from cancer of the stomach, operable or inoperable, will be alive at the end of five years.

Dr. McHardy's point that the responsibility of considering the possibility of cancer of the stomach must rest on the physician who first sees the patient is unquestioned, and it is our duty to impress on our medical colleagues the importance of this responsibility.

In reference to Dr. Gage's point concerning the etiologic relationship of ulcer of the stomach to gastric cancer, we must recognize that an ulcer of the stomach does present excellent factors for the development of cancer. So, also, does an ulcer of the duodenum, but a malignant lesion of the duodenum is seen so rarely that a difference undoubtedly exists between the behavior of an ulcerating lesion of the stomach and that of an ulcerating

lesion of the duodenum, in so far as malignancy is concerned. Unquestionably, the presence of occult blood in the gastric contents, as mentioned by Dr. Levin, is of extreme importance. We must recognize, also, the fact that the disappearance of occult blood from the gastric contents may be associated with a malignant lesion. We have no right to place absolute confidence in this test alone in distinguishing a malignant lesion from a nonmalignant lesion.

GASTROSCOPY IN HEMORRHAGE OF THE STOMACH*

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Assuming the position of safe endoscopy with the introduction of the flexible gastroscope, this diagnostic procedure has become generally accepted in the intervening years. Sufficient time has elapsed to disprove the contention that the earlier writers were unduly enthusiastic; conclusions drawn from critical analyses and research establish the virtues of endoscopically exploring the stomach. Summarizing papers reveal essential unanimity concerning the special technic; a standard method of gastroscopy, with slight modifications, is realized. In eight years no new contraindications have been added. The instrument remains essentially unchanged; modifications permitting biopsy are in the experimental stage. Indications for gastroscopy have not widened greatly. From the accepted indications we have excerpted, "unexplained hematemesis or melena"—"any patient for whom exploratory laparotomy is contemplated." We hope to modify these accepted indications by suggesting the application of gastroscopy in selected instances of acute melena or hematemesis, free of "shock."

Authors mention the use of gastroscopy after the hemorrhage has ceased. There is no definite reference to applying the procedure to instances of active bleeding at which time the diagnosis is so difficult to make and is so important to the management of the case. Schindler states "Gastroscopy has been feasible as soon as the third day after a profuse hemorrhage and probably would be innocuous even if performed during the hemorrhage." We are endorsing the latter portion of this statement. It is well appreciated that in gastric disease symptoms, signs, laboratory procedures and even roentgenologic findings give only presumptive evidence. Considering each of the problems encountered in hemorrhage we will attempt to rationalize our contention with the claim that gastroscopy is a safe and most accurate method of immediately determining the source and character of gastric bleeding.

Impulsively, a tentative diagnosis of bleeding ulcer is made when presented with a case of upper gastrointestinal hemorrhage. All are aware of the statistical 25 per cent incidence of melena or hematemesis in ulcer cases. Such reasoning is erroneous if Gutman's contention, that only 19 per cent of gastric hemorrhages are due to ulcer, is correct. Assuming that an ulcer does exists, judging from history or previous roentgenology, still the indication for gastroscopy remains. A scopically visible ulcer, gastric or marginal, may be studied and an opinion gained as to its relation to blood loss. Chronicity, visible sclerotic vessels in the ulcer crater and penetration are reasons for surgical intervention. An uncomplicated ulcer would be managed medically. A known chronic duodenal ulcer, not available for gastroscopic viewing, may be an innocent associate of bleeding gastric lesion; by establishing this we may prevent erroneous surgery directed at the duodenal lesion.

Gastritis, diagnosable only by direct vision of the gastric mucosa, is probably the source of bleeding in those instances of massive hemorrhage where a diagnosis is not available after roentgen examination and exploratory laparotomy. Shaw has recorded the incidence of such cases to be 39 per cent. The ulcerations and erosions of the chronic

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hypertrophic, superficial and atrophic gastritidies are pertinent to this discussion. They may occur alone or concomitant to ulcer, malignancy or gastroenterostomy lesion and as such may be the source of bleeding while the other is suspected. Establishing gastritis as the source of hemorrhage eliminates any need for surgical intervention on this score with the exception of pyloric obstruction from the hypertrophic variety. Gastritis is usually regarded as contraindicative to operative measures, for it limits the normal mucosa available for surgically re-establishing the stomach and threatens involvement of the operative site to nullify the benefits expected of surgery.

Gastric malignancy, encountered upon gastroscoping the acute bleeder, will, in most instances, show an associated gastritis; either may be a source of bleeding. Surgically, in management of malignancy, resection is the issue and such is hardly to be ventured on an acutely bleeding case nor upon a stomach largely involved by gastritis. Gastroscopy would prevent such haphazardous invasion of the abdomen.

Small benign tumors, friable gastric mucosa, gastric purpura, mucosal erosions of hepatic insufficiency and other non-inflammatory sources are encountered as sources of hemorrhage and in each the adaptability of the gastroscope to the diagnosis is apparent. X-ray would be of no aid in differentiating these cases. Surgery, as a disgnostic procedure, would be valueless and probably harmful; certainly, it could have no benefit as an emergency procedure.

It is our experience that often patients with gastroduodenal bleeding when first seen are either not in or have recovered from the phenomenon "shock." In this shock-free stage we are convinced that the risk of gastroscopy is minimal and is comparable to intubation, which is practiced (using a large soft Ewald tube) prior to passing the scope to empty the stomach, lavage it with ice water if necessary and to establish the innocence of the esophagus. We feel that if the Ewald tube is passed without difficulty that the gastroscopic passage through the esophagus is not to be feared. It is our practice to scope the patient rapidly, not consuming more than five minutes for the procedure. Under such study the patient actually experiences less discomfort than when we pass the Woldman collapsible gastric tube, which we often use in the treatment of patients with ulcer hemorrhage, as a means of administering a continuous aluminum hydroxide drip. We are aware of esophageal varices as a source of bleeding; none of the patients we examined had any indications of such pathology.

Since bleeding may result from any of several previously considered possibilities it is readily appreciable that most instances of acute melena or hematemesis are of undetermined etiology. Exploratory laparotomy is ever prominent in consideration when the source of bleeding is not known and when the hemorrhage shows potentialities of persisting or of getting beyond control. In an earlier statistical paper we have revealed a 3.5 per cent medical mortality. Further, if surgery is considered necessary to check the bleeding, then, as established authoritatively by Gordon Taylor, and substantiated by others, it should be done within the first 48 hours. With regard to surgery, because of the mortality figures, only Finister has a 6.8 per cent mortality in the surgical management of hemorrhage, because quite frequently the source of hemorrhage is not amenable to surgery nor diagnosable by laparotomy, we are very reserved in offering our patients the risk. However, the existence of definite operative indications is admitted; in their presence, or if an insistent surgical consultant presses the issue, then, in order to ascertain definite evidence as to the source of bleeding, gastroscopy is our aid as a precedent to surgery to facilitate the diagnosis, determine the need for surgery and establish the operability.

We therefore offer for consideration a possible gastroscopic indication; certain instances of acute melena or hematemesis free of "shock" or other contraindications in whom an immediate diagnosis is essential to the management of the case. Unquestionably, shock accompanying hemorrhage renders hazardous not only gastroscopy but

also intubation and any type of surgery. A knowledge of the gastric mucosa, available by endoscopic exploration of the interior of the stomach is often indispensable to the accurate and proper management of hemorrhage when one realizes the etiologic possibilities and that in no simpler way, at this time, can the source of hemorrhage be determined.

In three years we have encountered only twelve patients with acute hemorrhage in whom we judged the procedure applicable. Clinical judgment played a great part in the selection. In ten instances the prospect of surgery stimulated the examination. All were scoped while in the active period of bleeding, six had manifest hematemesis, the remainder had tarry stools and anemia as evidence of their active bleeding. Of the ten for whom laparotomy was considered only four became surgical cases.

SURVEY OF PATIENTS GASTROSCOPED DURING ACUTE STAGE OF HEMORRHAGE

Case No.	History	Age	X-rays	R. B. C.	Hb.	Gastroscopy
	Gastroenterostomy					
R-6847	Melena and hematemesis	66	None	3.5	70	Jejunal ulcer
R-7816	Melena	37	Negative**	2.5	45	Superficial gastritis with erosions
B-30642	Gastroenterostomy					
	Melena and hematemesis	48	Carcinoma*	3.9	70	Marginal ulcer; benign
R-6240	Gastroenterostomy					
	Melena and hematemesis	59	Carcinoma*	2.7	50	Superficial gastritis; carcinoma
R-1276	Melena	58	Negative**	3.3	65	Atrophic gastritis with erosions
R-667	Hematemesis	64	Carcinoma*	3.3	70	Hypertrophic gastritis; benign ulcers
R-8779	Melena	52	Negative**	4.0	65	Superficial gastritis; benign ulcers
R-2829	Melena	42	Negative*	3.7	70	Gastric purpura
R-7628	Melena	54	Carcinoma*	3.0	50	Hypertrophic gastritis; benign ulcers
R-9057	Melena	33	Carcinoma*	4.0	70	Hypertrophic gastritis; benign ulcers
S-2008	Repeated hematemesis and melena	35	Duodenal ulcer**	3.4	65	Negative
B-41570	Hematemesis and melena	63	Carcinoma*	2.5	50	Carcinoma at cardia

Gastroscopic diagnosis was substantiated in each instance.
*X-rays done prior to this admission.
**X-rays done after complete recovery.

DISCUSSION

Anticipating critical reaction to this presentation we sought personal communications from a group of prominent American physicians interested in gastroscopy that we might have an index as to the conservative thought in the United States. We received cooperative responses from Doctors Joseph Bank, Crawford Barnett, Edward Benedict, James L. Borland, Edwin Boros, James Carey, John Fitzgibbons, E. B. Freeman, John Howard, Chevalier Jackson, Gordon McNeer, H. J. Moersch, Marie Ortmayer, C. O. Patterson, Gerald H. Pratt, John Renshaw, Julian Ruffin, Leon Schiff, Rudolph Schindler, Jacob Schloss and William Swalm.

The opinions of these contributors certainly satisfy the purpose of our questionnaire. Since we consider Rudolph Schindler the foremost gastroscopic authority, his reply is reproduced: "I have never gastroscoped during a gross hemorrhage, only two days after, but I have recommended it in a case in which gastroscopy did not permit the recognition of the source of the bleeding. In my opinion gross hemorrhage is a very important indication for the use of the gastroscope. The gastroscope may reveal severe bleeding inflammation of various types, or non-inflammatory hemorrhage erosions. Such a discovery may prevent the surgical removal of a non-bleeding duodenal ulcer. Furthermore, benign tumors as a source of hemorrhage are sometimes discovered only by gastroscopy, especially myomas."

We judge from this response and his other writings that Schindler feels gastroscopy is relatively innocuous in such cases but that because of his position of leadership and the realization that many novices would be led into radical gastroscopy, he has been ultra-conservative.

Those communicators, advising against gastroscopy during acute hemorrhage do not claim to have performed a series of cases under this circumstance. Of the twenty-one, only seven admitted having per-

formed examinations in which there was definite evidence of bleeding, none had encountered any complication. Four others admitted that they would favor gastroscopy as a precedent to emergency surgery. Only six of the group delayed the examination until x-rays were done. Those favoring examination of bleeding patients have satisfied their curiosity by gastroscopy in such emergencies and none report any misfortune. Those who offered objections listed esophageal varices and reactivation of severe bleeding as their reasons for conservatism.

Renshaw reserves gastroscopy for those hemorrhage cases in which after ten days' care an x-ray "reveals a gastric ulcer or fails to reveal the cause of hemorrhage" and states further "I have never seen a recurrence of the bleeding or any untoward reaction. This applies even to hemorrhage cases resulting from esophageal varices." In answer to the inquiry as to the value of gastroscopy in hemorrhage he replies: "I do not believe gastroscopy contributes significant data in the usual hemorrhage case."

With the exception of Howard, Ruffin, Boros and Fitzgibbons, the value of gastroscopy in determining the source of bleeding is enthusiastically admitted. Benedict, like Renshaw, requires a negative roentgenologic study, but admonishes that if gastroscopy is to be of aid it must be done within three days "for the erosions and superficial ulcerations in the mucosa heal with extraordinary rapidity." We suspect that the disappointments of Howard, Ruffin, Renshaw, Boros and Fitzgibbons may be explainable on this basis.

Ruffin and Patterson are the only correspondents who admit performing gastroscopics in the face of hemorrhage.

Barnett, in stating: "I do not gastroscope my cases of acute hemorrhage at the present time" offers a clue that he suspects the likelihood of the eminence of such an indication being acceptable. Barnett also suggests: "we may assume that actual therapy in acute hemorrhage through the use of the flexible gastroscope, may be expected in the near future when his (McNeer's) modifications of the instrument are on the market through Wappler." But surely this will not be established if we do not become sufficiently gastroscopically bold as to venture a "diagnostic-look."

CONCLUSION

It is not unlikely that gastroscopy is indicated in selected instances of acute melena and hematemesis.

DISCUSSION

Dr. A. L. Levin (New Orleans): The question of gastroscopy in hemorrhage is still in the realm of debate. There is no unanimous agreement as yet as to when gastroscopy should be done in a case of hematemesis. Dr. Browne has presented the views of gastroscopists as he gathered them from literature and otherwise. I have gone through the same task and presented my views before the National Gastroenterological Society last June. Here, I would like to make the following remarks: We all hesitate to do a gastroscopic examination during active bleeding. If esophageal bleeding is suspected, the esophagoscope is the instrument of choice. In the majority of hematemesis cases at Charity Hospital, we had the opportunity of doing gastroscopic examinations only after several days following the hemorrhage. In quite a number of those cases we have observed chronic gastritis with erosions. In some there was a definite superficial bleeding ulcer. In several cases there were definite hematomas or distended vessels, varicosities-like and oozing of blood from those vessels. This was a common source of bleeding. In some cases, probably examined too late, when the original source was effaced, no discoverable causative factor was present. I would advise, however, not to hesitate to examine gastroscopically, an active gastric hemorrhage case. A recent case taught me a lesson of great value. I gastroscoped a desperately active bleeding case where twelve transfusions did not check hemorrhage. I discovered a bleeding ulcer and advised immediate surgery and the patient's life was thereby saved.

Dr. Donovan C. Browne (In closing): The questionnaires referred to were used that a cross-section of opinion might be obtained. None were employed locally, since I felt we were sufficiently familiar with the work and attitude of our group. If Dr. Levine will recall, we discussed this problem at length only recently.

A point I feel should be stressed further is that he found suggestive evidence of hemorrhage after three to four days. It must be kept in mind the rapidity with which these gastric lesions heal, and if definite information is to be obtained, gastroscopy must be early.

PRESENT STATUS OF CHEMOTHERAPY IN UROLOGY*

A CLINICAL EVALUATION

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AND
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In the treatment of urogenital infections, urologists generally have taken a far more conservative position regarding the newer azo derivatives than the physician practicing general medicine. For we have been deluded so often in the past with unwarranted propaganda to the effect that such and such a drug was now available that would sterilize any urine of its bacterial content, that we refuse longer to be part and parcel to such a hoax. It is true that one or two urologists, who should know better, have allowed their pictures to appear in a certain popular weekly magazine along with interviews in which they claimed that seventy cents' worth of sulfanilamide would cure any case of neisserian infection or that a few sulfathiazole tablets would send the last staphylococcus to a sure death. It is indeed regrettable that even among the best of new therapeutic agents introduced into medicine, three phases of evaluation seem inevitable: first, the period of over-enthusiasm; then, the reaction which elicits bitter condemnation and, finally, that serene state where matters hit an even keel of rationality. The fact that no less than between twenty and thirty different brands of these azo derivatives are now bartered daily across every drug store counter attests to the confusion into which the whole matter has drifted. We understand that federal and state laws will soon make it a misdemeanor for any pharmacist to dispense these drugs without a physician's prescription. Obviously such regulation should have been in force long ago. Many deaths would certainly have been prevented by such legislation, promulgated five years ago when these substances first flooded the market. That these agents are lethal in the excessive doses is daily attested to in some general hospital where adequate supervision, in its administration, is actually not provided. Apart from pneumonias and septicemias, where a life is at stake, it is unpardonable, in our opinion, to prescribe daily four to eight grams of these mystery-chemicals over indefinite periods.

Urologic chemotherapy should be carried out in a hospital where, under constant medical supervision, the patient has the advantage of every safeguard. Unfortunately, this is impractical. The next best plan is not to overdose the patient with a poison of whose potentialities we know so little. All have observed that those individuals confined to bed tolerate larger doses of these azo derivatives than ambulatory cases. Nicotinic acid is being widely used in some quarters, combined with these newer drugs, in minimizing the porphyrinuria. Unfortunately, the nicotinic acid does not always work. The combining of alkalis with these azo derivatives has its advocates and, in our experience, supplies a most valued buffer and should be more widely accepted. Bicarbonate of soda, given grain for grain in equal proportions to the substance selected, is routine with us. To our knowledge, no satisfactory explanation has been given regarding the favorable effect noted in giving alkalis here but the fact remains that the gastrointestinal upsets, which constitute no small amount of reactions experienced, are definitely minimized if not eliminated. Blood determinations for therapeutic level can be tried whenever practical; unfortunately, the majority of patients on these newer azo derivatives cannot receive this laboratory luxury. Anyway, the optimum blood concentration yet remains to be determined.

Our interest in chemotherapy as applied to urologic infections dates back to 1928 when we first reported our experiences with the azo dye, pyridium, in a series of 200 cases of non-complicated bacteriuria. Our observations then led to the conclusion that the introduction of dye preparations heralded a new epoch in urinary antisepsis, for here we had a substance which, for the first time, was grossly detectable not alone in

*Read before the Orleans Parish Medical Society, June 10, 1940.

the voided urine but also in the secretion from the prostate and seminal vesicles. Such an epoch-making observation makes little appeal to clinicians today but twelve years ago it created quite a stir among serious workers in the field. We stated at the time that, in our opinion, much clinical research and experimentation still remained to be done before dyes with specific bacterial affinities could prove beyond peradventure of doubt their superiority. We urged, however, that clinicians familiarize themselves with these newer agents and apply them rigorously in order that a sane therapy might be formulated.

In 1934, six years after our first communication, we reported our tabulation of 1500 complete case records in which pyridium had been used in the treatment of urogenital infections. This review included 654 cases of pyelonephritis, with 61.8 per cent either cured or definitely improved as shown by culture; 480 cases of urethritis, with 42.1 per cent negative to smears and cultures; 360 cases of prostatitis, with 81.6 per cent improved or negative to culture; and 15 cases of cystitis, with 33 per cent negative to culture. The interesting summary of 282 replies received in answer to a questionnaire on azo dyes, sent out to members of the American Urological Association, can only be here summarized in the briefest manner: 160 urologists had obtained favorable results with pyridium, while 128 had not, but it was most interesting to observe that in those replies unfavorable to the dye, invariably they had not used in it more than a few instances and then for a very short period. We closed this report by stating that notwithstanding the great practical value of combined clinical and laboratory research, we believed that there would remain much in the empirical inheritance of azo dyes and their derivatives which could not be fully explained by present day investigations; that their actions and reactions within test tubes and the utilization of their properties in therapy would not always parallel. On this point our opinion today remains unchanged despite the roseate claims from certain quarters relative to the latest azo derivatives now being tried.

In 1937, in an historical review and evaluation of urinary antisepsis, we warned the profession against large initial doses of sulfanilamide in the treatment of urogenital infections, pointing out that headaches, fever, lassitude, cyanosis, general malaise and extreme prostration following intoxication by these substances might do patients more harm than good. We are sorry to say this prognostication has been verified.

SULFANILAMIDE IN GONORRHEA

In 1937, we began treating gonorrhea with prontylin. This was the pioneer substance available for such therapy. Another kindred preparation, prontosil, and then neo-prontosil, were developed from the original formula, and all of these agents were later called sulfanilamide.

Looking back over those hectic days, one is struck with the enormity of the literature that appeared in medical publications during the years 1937 and 1938, lauding the merits of these new substances. For a time it appeared as though we now had a specific for neisserian infections and their complications, and many reported 90 per cent cures in two weeks, by the use of this new agent.

The dosage of sulfanilamide advocated at the time in England was more conservative than that used in this country, and we followed the English school, feeling that we had to advance cautiously with this drug of unknown toxicity. From the beginning our plan adopted was to give from 10 to 15 grains of sulfanilamide four times daily for about a week, and if no results were forthcoming in that time, the drug was usually discontinued. Never did we abandon local treatment in conjunction with the oral medication, as we felt that the rationale of using hand injections or irrigations of mild antiseptic solutions were on too well established a foundation to abandon them. Most urologists followed this procedure, and still do so.

Not alone did we follow the English school in the employment of conservative dosage, but we further supplemented the oral administration of this new chemical by subcutaneous injections, every other day, of

gonococcus antigens or lysates, in order to increase the antibodies. We have rarely varied from this plan in the four years we have been using these agents, and we feel sure that the action of the sulfanilamide is markedly enhanced by the additional support of the antigen therapy.

Among other observations we noted that a certain percentage of patients did not tolerate the drug well, even in small doses, for on the second day some complained of nausea, loss of appetite and headaches. In these office patients, by the third or fourth day, many would be so upset that they would refuse to take the drug. Later we found that by using equal parts of bicarbonate of soda with the sufanilamide, the gastrointestinal symptoms were minimized. Most of us will agree that the drug in use today certainly appears much less toxic than that available four years ago. Yet the clinical results are about the same. We are led to believe that no matter what the dosage, failures will be experienced by its use.

There is no question that the patient confined to bed can take larger doses of sulfanilamide and tolerate them much better than the office patients. As few of these patients will consent to go to bed, but must be about their daily work, the problem of drug administration has many complexities.

Pelouze, in analyzing data collected by the American Neisserian Society, states that figures culled from many sources appear to show that in the management of gonorrhea, sulfanilamide is reported to have brought about prompt cures in from 25 to 40 per cent of dispensary patients, from 45 to 55 per cent of office patients, and, perhaps, from 75 to 85 per cent of bed patients. He states further that there are actual data to show that many patients, whose symptoms disappear, still harbor the gonococcus and transmit infection.

The American Neisserian Society finds that the common scheme of dosage for treating gonorrhea in ambulatory patients averages 80 grains a day for two days, 60 grains a day for the next three days, and a later continued daily dosage of 40 grains. Many clinicians, he states, consider this too high, and use 60 grains a day for four days, and a maintenance dose of 40 grains a day thereafter. In bed patients, on whom the most dependable figures have been obtained, the initial dose was 120 grains a day for several days, and then a gradual reduction in dosage.

The doses should be so spaced as to prevent low blood concentration during the night. Some give larger doses at bed time to ambulatory patients. Many administer sodium bicarbonate in half quantity with each dose.

RELAPSES UNDER SULFANILAMIDE THERAPY

The problem of relapses in the infective process following the withdrawal of sulfanilamide has given many clinicians anxious moments in the management of cases supposedly cured. That bacteria do disappear in the urine and in the secretion from the prostate and seminal vesicles following sulfanilamide therapy and that even cultural studies repeatedly carried out give negative findings and yet later to observe a relapse is experienced by all. Such relapses, in our observations, occurred much more frequently when massive doses of the drug were given over short periods of time than when smaller doses were administered over a prolonged period. Particularly in the treatment of gonorrhea has this type of relapse been most disconcerting because we found that relapse cases often proved sulfanilamide-fast and would fail to respond to the drug upon re-application no matter in what volume the drug was given or over what length of time. Ballenger and co-workers have recently emphasized the importance of recognizing protected foci or dead spaces as a chief cause of failure in many urogenital cases; here a longer time, a higher degree of immunity or a greater concentration of the therapeutic agents is required for the eradication of infection from such foci than for the eradication of infection not so protected. Antigens or lysates administered hypodermically in conjunction with the oral administration of these newer chemotherapeutic agents works better than when the

injections are omitted. These antigens or lysates greatly increase the antibodies in the blood and in this way make sulfanilamide more effective.

TOXIC MANIFESTATIONS OF SULFANILAMIDE

Lockwood, Coburn, and Stockinger have grouped the untoward effects so well that we give here a resumé of their findings:

(a) *Cyanosis* has been the most common factor observed by observers as a deleterious by-effect in the administration of the sufanilamides. Approximately 50 per cent of adults and 20 per cent of children become cyanosed under the regimen of taking these drugs, according to the literature. It develops occasionally within twelve hours; most persons become blue before the third day. It parallels closely the concentration of methemoglobin in the blood as illustrated by spectrophotometer. Cyanosis disappears rapidly following withdrawal of drug but the question arises whether the development of methemoglobinemia may not aggravate the underlying disease. In the four years we have been using these substances we have noted practically no cyanosis in our cases as we have never found it necessary or prudent in ambulatory urologic cases to give the large doses advocated by others.

(b) *Gastrointestinal symptoms* are observed frequently, particularly anorexia, nausea, vomiting and abdominal pain. Diarrhea can be severe at times. In infants such toxic effects present a real problem where it is so essential to maintain a nutritional balance. They disappear when the drug is withdrawn.

(c) *Disturbances of the nervous system* in the form of dizziness and headaches are observed frequently; lightheadedness and depression are also observed. Some few patients become utterly disoriented and even maniacal. All these signs disappear the moment the drug is stopped. However, in certain instances, where patients have been overdosed by these substances a peripheral neuritis has intervened. In our extensive experience with the azo derivatives we have never encountered this complication because of the conservative doses we have always employed.

(d) *Sulfanilamide fever* is noted following administration of drug in certain hypersensitive patients and usually means that such patients will not tolerate this form of therapy well. The fever comes on within twenty-four hours but may be delayed for several days, after beginning the drug, and may go as high as 106° F. Fever reaction patients seem to have a low tolerance for sulfanilamide. The temperature becomes normal when the drug is stopped.

(e) *Precordial and abdominal pain;* unexplained abdominal pains during course of treatment are chiefly located in upper quadrants of abdomen and occur in patients showing the other toxic evidences, namely, cyanosis and gastrointestinal upset.

(f) *Acidosis* is quite rare among complications but has been noted.

(g) *Rash* in parts or over entire body, with intense itching, can be a most trying toxic manifestation but unlike the arsenical rash usually disappears within a few days following cessation of drug. At one time it was thought that over-exposure to sun rays, while taking the drug, was the sole cause of these rashes, but we have noted them in individuals who never went out in the sun.

(h) *Jaundice* is of two types, one a severe hemolytic jaundice and the other the result of a hepatitis, an extremely disturbing development in view of possible permanent damage to the liver; usually accompanied by secondary anemia; blood transfusions help here.

(i) *Anemia;* severe hemolytic anemias have been attributed to sulfanilamide, and may occur after moderate doses of the drug, at times accompanied by icterus. Enlargement of spleen and liver have been observed. Transfusions seem to counteract progress somewhat.

(j) *Hemoglobinuria* usually develops early in hypersusceptive individuals with alarming drop in hemoglobin level within a few days.

(k) *Granulocytopenia;* depression of leukocytes following sulfanilamide may be partly due to drug and partly due to the infection present; in some the granulocytes

disappear completely with alarming pyrexia but with final outcome satisfactory.

In a few instances the toxemia will not evidence itself during the course of therapy but will come on two or three weeks following discontinuance of the drug. Pyrexia to 105° F., jaundice, enlargement of spleen and liver, and a rash, may be among such delayed symptoms. Such reactions may well come on after the patient has been discharged by his physician. Usually whenever severe toxic reactions occur, such patients are not benefited by sulfanilamide and the sooner it is discontinued the better.

INHIBITORY ACTION OF SULFANILAMIDE ON SPERMATOGENESIS

Jaubert and Motz, of Paris, carefully studied the spermatic fluid in twenty-three men with gonorrhea treated with sulfanilamide and found that, as a result of such therapy, 39.4 per cent remained with normal sperm, in 30.4 per cent sperm was moderately decreased and in 30.4 per cent it was very much diminished. The number of the spermatozoa as well as their shape was noticeably changed, this toxic action appears as soon as sulfanilamide is begun and appears to continue. In contrast they quote a series of gonorrhea cases in which sulfanilamide was not used and found normal sperm in 89.5 per cent of cases, moderately decreased in 7.8 per cent, very markedly decreased in 0.4 per cent and azoospermia in 8.2 per cent. Cases complicated by epididymitis, prostatitis and vesiculitis were excluded from the series under study. Unfortunately, these observers do not mention the quantity of sulfanilamide they prescribe. Our personal observations on this phase of the toxicity of this substance have not been sufficiently extensive to comment.

In the limited time at our disposal, it is not possible to evaluate clinically many chemotherapeutic agents that still hold the attention of the serious worker in this field; such substances are hexylresorcinol, beta-hydroxybutyric acid and mandelic acid still remain subject to more deserving experimentation than has been accorded them thus far. All three have merit. But the azo derivatives, coming at about the same time, with such dramatic appeal, have completely obscured these other deserving agents for combating urinary infection.

At present the urologist is being asked to appraise therapeutically a group of these chemicals, the better known of them being; (a) sulfanilamide, (b) uleron, (c) disulon, (d) sulfapyridine, (e) sulfacetimide, (f) benamide, and (g) sulfathiazole.

That these recently introduced azo derivatives represent a decided step forward in the treatment of urogenital infections no one will question. And these seven mentioned agents are but the vanguard of a host of other similar substances yet to come.

Uleron or D-373 has been recommended for its specific action not only against gonococci, hemolytic streptococci and meningococci, but also against staphylococci. The foreign literature on uleron or D-373 is so formidable that an adequate review of findings is impossible here. In 1938 alone more than 160 articles reported results in the use of this preparation in gonorrhea. It appears indicated in urethritis, seminal vesiculitis, epididymitis, prostatitis, vulvovaginitis, endocervicitis, salpingitis and gonorrheal arthritis; also in staphylococcus infections generally in urogenital tract. Although still experimental, uleron has been used in our office practice in over a hundred cases of neisserian infection with approximately 70 per cent satisfactory results. Dose: 3 grams (45 grains) daily for four consecutive days. After this course of treatment there should be an interval of seven days, during which no drug is given. No more than three courses of treatment with uleron should be given. We noted no peripheral neuritis in our series under uleron and the other usual toxic symptoms, if present, were far less marked than those experienced with similar doses of sulfanilamide.

Sodium disulon or sulfanil-sulfanilamide: This compound azo derivative is credited with a therapeutic index at least five times as favorable as that of sulfanilamide. Like most of these substances we observed that the blood concentration with sodium disulon does not vary with fluid intake; that is, forced or restricted fluid intake has no ef-

fect on the blood concentration nor on the total excretion of sodium disulon.

This chemical has enjoyed the enviable position of acting favorably in many cases of gonorrhea that appeared to be sulfanilamide-resistant. Repeatedly, this observation has been made in our own practice. We might state further that in the treatment of gonorrheal cases, if there is no response to the drug in four days, one may conclude that no response will be obtained with this therapy, and it might just as well be discontinued. If sodium disulon is going to affect the gonococcus at all, it will be found to act promptly, even where a conservative dosage is employed.

Peripheral neuritis, a complication observed by some, has never been noted in our practice, and we attribute this solely to the fact that we have avoided excessive dosage of these substances. Sodium disulon has been recommended in infections due to the gonococcus, staphylococcus, certain sporulating anaerobes, psuedomonas, and *Streptococcus hemolyticus*.

Since the beginning of our clinical study with sodium disulon, we have employed it in approximately 200 cases of gonorrhea and over 400 cases of kidney and bladder infection. Sodium disulon is not a specific in all types of urogenital infection. In approximately 33 per cent of instances we found that it so upset our patients that they refused to take it. In those who can tolerate sodium disulon, fully half of the patients are markedly improved by its use, while in the remaining half we obtained apparent cures, both to stained smears and culture studies. Sodium disulon appears far less toxic than sulfanilamide. It is far more effective in infections of the coccal group and is less reliable in treating those of the colon bacillus group.

Sulfapyridine: This drug is really a sulfanilamide pyridine. Its administration demands constant supervision because, on the basis of blood concentration values it appears to be more toxic than sulfanilamide. In urogenital inflammations it has been recommended for use in treating the gonococcus, *Streptococcus hemolyticus* and *B. coli* infections. Numerous instances of stone formation in the kidneys have been reported following its administration over a protracted period and this complication must ever be borne in mind. Where hematuria is observed following its use, the urinary tract should be x-rayed in order to rule out sulfapyridine calculi. Some deaths have been reported from anuria following sulfapyridine therapy; whether all of these fatalities were due to unrecognized, bilateral renal stone formation cannot be determined.

Sulfacetimide or 338-A is an acetyl compound derived from sulfanilamide which is claimed to be markedly effective therapeutically with minimum toxic action while retaining maximum effectiveness. It is particularly advocated in gonorrhea and *B. coli* infections. Sulfacetimide is also a newcomer and our experimental studies to date do not warrant forming an opinion regarding its efficacy, but of its low toxicity we can attest.

Benamide or S-22 is another compound and analog of sulfanilamide which, because it is an acyl derivative of the parent drug, appears to possess low toxicity and appears particularly effective in combating streptococcus infection in the urine. This is one of the newer experimental products given us for testing and we have not sufficient data as yet to decide fully its merits but it is less toxic than sulfanilamide.

Sulfathiazole or S. A. T.-3925 is a sulfanilamide thiazole derivative. Like sulfanilamide it is claimed to be effective against streptococci, and like sulfapyridine has a pronounced anti-pneumococci action, but, unlike either of these preparations, it further exerts a definite effect upon staphylococci. So far, in using it experimentally, in a limited number of cases of resistant staphylococcus infections of the bladder following transurethral prostatic resection, it has completely cleared up foul bladders, within a week or less time, that resisted local treatment combined with the oral administration of other members of the azo derivative group. It is far less toxic than sulfanilamide when given in corresponding dosage.

SUMMARY

Much more experimental work must be done clinically before we can definitely evaluate the various sulfanilamide derivatives in order to give each its allotted place in urologic practice. Whereas we cannot align ourselves all the way with many ultra-enthusiasts in chemotherapy who claim 100 per cent clinical results, nevertheless we are of the opinion that Domagk's discovery of the clinical bacteriostatic effects of the parent substance, prontylin, ranks second only to Ehrlich's discovery of the value of salvarsan in spirochetal infestations. As we view present difficulties and failure with these drugs, it would seem that too large a dosage is being used by many, causing failures or toxic reactions, where smaller doses, in continuation with antigens, and the necessary local treatment, might bring results. Maintaining an adequate fluid intake is most essential, especially where sulfapyridine is being administered so as to avoid colloid calculus formation. Repeated cystoscopies on every patient using these drugs seem imperative. Finally, it must be acknowledged that no single agent in the series can be used for all types of urogenital, bacterial infections and that local treatment so well established must always supplement oral and serologic therapy.

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CHEMOTHERAPY IN PNEUMONIA*

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ALEXANDRIA

In chemotherapy in pneumonia, at last, we physicians have treatment within reach of most of our patients which will tend to give us a standard of treatment.

In chemotherapy we have had, first, sulfanilamide which was beginning to find a favorable place in our armamentarium when a derivative, sulfapyridine, was discovered. The latter has proved more dramatic in action. It is about sulfapyridine that this paper will be chiefly concerned. There are two other derivatives of sulfanilamide (sulfathiazole and sulfamethylthiazole) which are under study and experimentation that might prove even better, but as yet they have not been Council accepted.

*Read before the sixty-first annual meeting of the Louisiana State Medical Society, New Orleans, April 24, 1940.

REVIEW OF LITERATURE

From reviewing the recent literature we find that after Domagk's discovery of the remarkable bactericidal properties of sulfamidochrysoidine had become rather widely known and others had shown that sulfanilamide was capable of producing comparable results in many and varied infections of the human body, there was an intense activity among chemists to synthesize and investigate compounds related to these two. In the year 1937, papers dealing with these compounds appeared widely in the medical literature of the world and out of this research came benzyl sulfanilamide, the various derivatives of disulfanilamide and sulfapyridine.

Whitby[1] first described sulfapyridine in a paper which appeared in the Lancet, May, 1938. He had previously been actively investigating many other related compounds but this one showed considerable protection in mice against pneumococci of types I, VII, and VIII. Some protection was also evident for types II, III, and V. The preliminary determinations of toxicity for mice gave rather low values and the author at first thought that the drug acted on the capsule of the organism. Later in the same year Whitby[2] gave more complete information about this new drug, stating that it was highly active against certain types of pneumococci as well as beta streptococci and the meningococci. Sulfapyridine had already been tried in human cases, by that time, though these are not described in detail. Even in this early report vomiting was mentioned as a troublesome side action of the drug and experiments had already been attempted at parenteral administration by making a suspension of sulfapyridine in olive oil.

The first report of a fairly large series of cases treated with sulfapyridine was that of Evans and Gaisford[3] who used the drug in 100 patients with lobar pneumonia. Simultaneously 100 patients were treated by ordi-

nary methods to serve as controls. The mortality in the treated series was 8 per cent, whereas that in the controls was 27 per cent. The dosage used was 2 grams of the drug orally on admission, followed by 1 gram every four hours for the first 72 hours, the total dose usually amounting to 25 grams.

Following these early papers interest in the new drug, which was then supplied under the name M & B 693, rapidly spread to other countries. In the United States, Long and Bliss conducted pioneer studies of a carefully controlled nature. By May, 1939, sufficient data had accumulated so that the Council of Pharmacy and Chemistry of the American Medical Association felt justified in publishing a report[4] approving the drug for experimental use. This report showed that sulfapyridine had been used in approximately 1800 cases of pneumonia in adults and in 650 cases in children. The action of the drug was stated to be unknown at the time of the report and considerable caution in its use was urged. However, the statement was made, "At the present time there is every indication that the drug is a useful remedy." The report set up standards for purity and identification of the drug, something which had been notably lacking up to that time.

In early determinations of toxicity of sulfapyridine reports were made that it was less toxic than sulfanilamide, but later experiments, using the soluble sodium salt, proved it to be more toxic when it was completely absorbed.

PHARMACOLOGIC ACTION

The low solubility of sulfapyridine also determines one of the complications it sometimes causes: the formation of renal calculi. The kidneys are able to concentrate the glomeruli filtrate containing the drug and its acetyl derivative to such a point that crystals which may readily form concretions are precipitated. Sulfanilamide has not been known to be responsible for the phenomenon, probably because of its greater solubility. Whitby[2] has shown that despite the relative insolubility of sulfapyridine the drug seemed to be readily absorbed in therapeutic doses. This observation has been confirmed by almost all observers since that time. Absorption of the drug seems to be facilitated by administering it in finely divided form, crushed, and mixed with food or milk.

After sulfapyridine enters the blood stream its distribution in the body is very similar to that of sulfanilamide; it is found in all the tissues roughly in proportion to their water content. Sulfapyridine appears very rapidly in the blood after oral administration and attains its maximum concentration during the second hour following the single dose.[5] This drug diffuses readily into the cerebrospinal fluid where it may reach a concentration almost equal to that in the blood. Sulfapyridine is partially converted to the acetyl derivative in the human body and there is a marked individual variation with respect to this change. The acetylation of sulfapyridine may be correlated with the metabolic rate, acetylation being more active with elevated metabolism. Sulfapyridine is freely excreted in the urine, but the percentage which may be recovered from the urine varies considerably among different individuals and bears a direct relation to the excellence of kidney function.

Sulfapyridine, like sulfanilamide, gives rise to certain degradation products which have a catalytic effect on the reaction tending to produce methemoglobin in the body. Cyanosis is frequently observed when full doses of the drug are given. The nature of these catalysts is still a matter of dispute.

METHOD OF ADMINISTRATION OF SULFAPYRIDINE

The principles of dosage of sulfapyridine are still not definitely established, but due to the rapid and rather complete absorption of the drug the oral route should be chosen unless vomiting or delirium make it impossible. Since the blood level reaches its peak approximately two hours after any given dose, the most advantageous spacing for doses is three to four hours apart, in finely divided form, mixed with food or drink, but not in capsules. The irregularity of absorption and the variability of acetylation make determinations of the blood level of sulfapyridine almost imperative if accurate control of dosage is sought. Fortunately, the

widely used method of Marshall may be applied without modification to the determination of sulfapyridine in the blood. Empiric observations have indicated that the blood level should lie somewhere between 4 and 15 mg. per 100 c. c. in order to obtain good results. As with sulfanilamide, the rapid excretion of sulfapyridine from the body may be accomplished, if this is desired, by a great increase in the fluid intake and the promotion of diuresis. A necessity for this measure may arise in cases where severe reactions occur or where acetylated sulfapyridine crystals create mechanical difficulties in the kidneys. If difficulty is experienced in attaining the desired blood concentration by oral administration of the drug, the recent introduction of the sodium salt in a form suitable for intravenous administration solves the problem. Generally, only one or two injections are needed to produce a satisfactory level and this may often be maintained subsequently by proper oral dosage.

Bacteriologic experiments tend to prove that sulfapyridine does not, in itself, kill the organism but exerts a bacteriostatic effect which aids the normal defenses of the body in overcoming the infection, and that certain strains of pneumococci may become resistant to sulfapyridine if they have been exposed to the drug in sublethal concentration. Because pneumococci may become resistant to the action of sulfapyridine which does not inhibit the formation of specific antibodies it is advisable to attain the maximum blood concentration as quickly as possible.

In clinical pneumonia, many papers which have appeared describing the clinical results in pneumococcic pneumonia and in general, the dosage has followed more or less stereotyped procedures which consisted of an initial rather massive dose, followed by maintenance doses every three or four hours. When the treatment was successful, the first evidence of improvement (and this has been noted with great regularity by all observers) was a rapid and sudden drop in temperature, usually within the first 24 hours. Following this usually the patients began to improve immediately and quickly recovered.

After obtaining permission from the staff, I have compiled statistics of the pneumonia cases treated with sulfapyridine at the Baptist Hospital, Alexandria, Louisiana, during the past year. There were 90 cases of pneumonia, both lobar and bronchial. Of this number there were 48 children under 12 years of age with three deaths, a mortality of 6.25 per cent and 42 adults, (over

CLINICAL RESULTS FROM SULFANILAMIDE IN PNEUMONIA

Author	No. of cases	No. of controls	Average daily dose	Mortality per cent	Control mortality per cent
Flippin and Pepper	2	0	6 gm.	0	..
Dyke and Reid	8	0	6 gm.	0	..
Anderson and Dowdeswell	50	50	6 gm.	2	16
Agranat, Dreosti and Ordman	71	86	6 gm.	8.5	18.5
	27	27	6 gm.	7.4	22.2
Lawrence	2	0	6 gm.	0	..
Williams and Morgan	50	0	.	2	..
Meakins and Hanson	30	0	6 gm.	3.3	..
Alsted	6	0	Total of 12 to 33 gm.	33	..
Graham, Warner, Dauphinee and Dickson	50	?	Initial dose 12 gm. Then 6 gm.	6	23
Hanssen	6	0	.	17	..
Plummer and Ensworth	88	?	6 gm.	8	25-35
Smith and Nemir	93	0.7 gm. followed by	3.5 gm.	6	..
Plummer and Ensworth	270		6 gm.	12.6	35-40
Flippin	100	0	6 gm.	5	..
Wilson, Spreen, et al.	35	35	10 gm. (Later 15 gm.)	0	0
Long and Wood	139	0	6 gm.	7.2	..
Volini, Levitt and Campione	60	0	6 gm.	3.3	..
Pepper, Flippin, Schwartz and Lockwood	400	0	6 gm.	7	..
Totals—18 papers	1487	468		Av. 6.7	Av. 21

12 years of age), with three deaths, a mortality of 7.1 per cent. Average mortality of the 90 cases, 6.66 per cent. The average amount of drug taken by the adult cases was 13.6 grams.

THE FATAL CASES

	Age	Cause of Death	Amount of Drug
1.	86	Bronchopneumonia	38.5 gm.
2.	45	Lobar pneumonia (moribund on admission)	1 gm.
3.	65	Labor pneumonia (neoprontosil,	11 gm.
		sulfapyridine)	7 gm.
4.	6 mo.	Bronchopneumonia	3.5 gm.
5.	7 mo.	Bronchopneumonia—otitis media (neoprontosil,	1 gm.
		sulfapyridine)	0.2 gm.
6.	16 mo.	Bronchopneumonia with pertussis	1.5 gm.

There was the usual nausea and vomiting in almost all of the cases and occasionally cyanosis which was relieved by oxygen. Acetylated crystals were noted chiefly in the aged and debilitated cases. Leukopenias were noted occasionally but recovered quickly on stopping the drug. There were no cases of hepatitis, acute hemolytic anemias or agranulocytosis following sulfapyridine therapy.

CONTRAINDICATIONS TO SULFAPYRIDINE

The contraindications to sulfapyridine therapy in pneumonia are rather vague, and are based on suspicion and hearsay. Sulfapyridine should be avoided when patients give a definite history of an idiosyncrasy to sulfanilamide. It should be avoided or used very cautiously in patients who have hepatic damage. In patients who have marked anemia the drug should be withheld until a blood transfusion can be given. It may be administered with caution when there is a low white cell count unless a sudden drop from the original count is noted after the first one or two doses are given.

The drug is to be discontinued when signs of severe hepatitis, acute hemolytic anemia, agranulocytosis, or hematuria with or without signs of renal failure, develop.

Sulfapyridine has not been found to be incompatible with any of the usual drugs employed in the treatment of pneumonia and one should not withhold any drug when the necessity arises. This does not apply to saline laxatives or cathartics which are always to be avoided.

SUMMARY

It must be admitted that sulfapyridine is not an ideal chemotherapeutic agent but it is hoped and anticipated that it will be superseded by a more satisfactory agent.

It may be said that the results obtained with sulfapyridine in pneumonia have more than justified the initial hopes which were raised. There is a remarkable unanimity of opinion to the effect that the mortality rate for this disease has been lowered to approximately one-third of its former level through the use of this drug.

Already an enormous saving of human life has occurred as a result of the widespread use of this newcomer in the sulfanilamide series and it is not too much to expect that succeeding years will bring forth other compounds, each with its special field of usefulness, so that many of the most terrible bacterial infections known today will be rendered comparatively benign.

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DISCUSSION

Dr. F. A. Thomas (Urania): Dr. Herrington has presented a comprehensive paper on chemotherapy in pneumonia, and I think very little can be added to it. He has made an exhaustive study which should mean something to all of us.

I would like to mention one or two of the newer drugs not as yet Council accepted, namely, sulfathiazole. However, at present, there has been much experimental work done with it, and Dr. Long's report in the March issue of the Journal of the American Medical Association is very favorable, with the exception of its producing results very similar to those of sulfapyridine and the indications and contraindications are the same.

In regard to sulfapyridine, I wish to stress the importance of oral administration in sufficient doses to kill the organism and not allow drug fastness to develop. It has been proved that when drug fastness develops this particular pneumococcus will hold through 15 translations from one animal to another, and when this occurs you will run into difficulty with succeeding cases developed.

It has also been shown that sulfapyridine acts well given late in the disease and there are no contraindications to giving it along with serum. Drs. Lowell Brown and Finlan, in a selected series of cases, gave the two together, and according to this report reduced the mortality from 50 to 26 per cent in this particular kind of case, using the two together. His explanation of that is that because of the debilitated condition of the patient no immune antibodies have been developed. Consequently, the capsule of the organism cannot be penetrated so as to kill the organism out. By giving sulfapyridine, there will be produced bacterial stasis, slowing up of the growth of the organism, and in addition, giving the serum will activate the capsule of the organism, thereby allowing the phagocytes left to destroy them. In his series the results were gratifying in this selected type of cases.

Dr. J. P. Sanders (Caspiana): Sulfapyridine is certainly a wonderful drug in general practice and especially in the treatment of lobar pneumonia. However, other fields of chemotherapy have been opened up before. We have a drug, quinine, over 300 years old, which was not recognized as a chemotherapeutic agent until recently. Later 606 came in and then neosalvarsan, neither of which is antibacterial in action. When first discovered sulfanilamide was considered useless. Of course, we now know that it sets off some sort of mechanism that kills the organism. We wonder how many fields are going to be opened in the near future by other drugs, such as sulfanilamide, sulfapyridine and sulfathiazole have done. It appears to me that vast fields of chemotherapeutic reactions are going to develop soon and a great many uses may be made of them not now known.

I would like to ask Dr. Herrington what his opinion is of the method of action of sulfapyridine.

Dr. Henry D. Ogden (New Orleans): I think in evaluating the effects of sulfapyridine we have to keep in mind the causative organism. Pneumonia may be caused by other organisms than the pneumococcus. I recently had occasion to see a rather rare case, a case of staphylococcic pneumonia. The diagnosis of staphylococcic pneumonia was made because the sputum repeatedly was loaded with staphylococci, and on one occasion the blood culture was positive. At no time at all were we able to find more than a few pneumococci, and that on only one occasion. This patient was put on sulfapyridine with no results at all and the blood count dropped to 3,000. Finally, in desperation the patient was given one of the new drugs, sulfathiazole or sulfamethylthiazole, but the patient died after several days. I understand that two other physicians in New Orleans had two similar cases. The same type of treatment was followed with sulfathiazole or sulfamethylthiazole, I cannot say for sure which, but I do know it was one of these drugs. Therefore I think in evaluating the results of sulfapyridine we have to remember the causative organism of the pneumonia, as these new chemical

agents have varying effects on different organisms.

Dr. W. F. Drummond (Shreveport): In pneumonia many men give sulfapyridine as a means of prevention. That is to be condemned and if continued to be used in that way the mortality from lobar pneumococcal pneumonia will rise. Again, to give it in small doses, the organism becomes quite resistant and later full therapeutic doses are of no avail.

The majority of men have gotten away from typing the organism; to me that cannot be done. Plummer has clearly shown that with sulfapyridine alone there was a mortality of 17 per cent in type III pneumonia which could be reduced to 11 per cent with the use of type III serum and sulfapyridine.

There has appeared in the literature something we have seen before only rarely and that is, the same type pneumonia recurring in the same patient. The patient will have a type III or type IV pneumonia and be discharged from the hospital to return in four or five days with pneumonia of the same type.

It has been our experience that unless the typing is done before sulfapyridine is started that we cannot type the organism, but get a negative "Quellung." Pharmacologic houses deny such, but other men have found this to be true. Willoughby's impression in the beginning was that the action of sulfapyridine was on the capsule and this has been our finding.

In all probability sulfathiazole will be accepted very soon. We have used sulfathiazole experimentally at the Highland Sanitarium in Shreveport, but as we use sulfapyridine in pneumonia, and have had only one case of staphylococcal pneumonia (proved by sputum and blood culture) I cannot answer Dr. Ogden. I do not think sulfamethylthiazole will be placed on the market since The Mayo Clinic reports the all too frequent occurrence of a peripheral neuritis after its use.

Dr. C. P. Herrington (In closing): In answering Dr. Sanders' question, I cannot do anything about that. I have not found anything in the literature in regard to the mode of action. As Dr. Drummond said, the action was first thought to be on the capsule; this idea was changed and thought to be purely bacteriostatic in action. Now we are not so sure but that the action is on the capsule.

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THE EVALUATION OF VARIOUS INTRAVENOUS MEDICAMENTS IN THE TREATMENT OF SHOCK*

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The venous channels have been the chosen route for the introduction of certain medicaments for many years. The earliest attempts at intravenous therapy date centuries back, but only recently has this type of therapy become prevalent. It is especially efficacious in those conditions wherein the extra-cellular fluid content of the body has become altered by some pathologic process. Circulating extra-cellular fluid is represented by the blood plasma. This fluid constitutes the immediate environment of the organism and the degree of normalcy of the individual is proportionate to the normalcy of this medium. The extra-cellular fluid sustains two important services, the conveyance of nutrition and waste materials and the regulation of the physico-chemical conditions within the organism.

To supplant deficiencies of the elements that are necessary for electrolytic balance has been the apparent objective for which therapeutic attempts have been aimed. The administration of solutions containing sodium chloride will ofttimes correct a disturbance of the electrolyte pattern in alkalosis and in moderate acidosis. Sodium bicarbonate or sodium lactate can be given to advantage in cases of severe acidosis. A mere balanced salt solution alleviates the condition of severe dehydration, and intravenous glucose is efficacious in supplying energy when other more normal routes are unavailable.

There are, however, various conditions in which additions to the blood stream fail to return extra-cellular fluid to normal. The intricacies of the vascular tree and osmotic phenomena are ill understood. It is common clinical experience in treating certain conditions that large amounts of the usual fluid agents can be administered without correcting the underlying defect. Severe burns, and in the condition clinically known as shock, due either to trauma or hemorrhage, there

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is little success in regaining or maintaining normal vascular conditions.

Before evaluating means of therapy in the treatment of shock, brief analysis of the mechanism of this phenomenon must be considered. The hypothetic toxic theory has long been unconfirmed and generally discredited. The initiating factors are devious, including trauma, bleeding (external or internal), loss of plasma leading to concentration of the blood, fear, asphyxia, or cold. All of these factors lead to hyperactivity of the sympathetic nervous system. This in turn leads to changes in the permeability of the walls of the blood capillaries and loss of the intra-cellular fluid content of the blood. This decrease in the volume of the circulating blood is generally admitted to be the essential lesion in shock. Quoting Freeman,[1] "shock is the clinical condition characterized by progressive loss of circulating blood volume brought about by the tissue anoxia which results from inadequate circulation."

TREATMENT

In the treatment of shock, it should be the aim to restore vascular tone and vascular volume to a normal state as rapidly as possible. The introduction of fluids such as saline, Ringer's and glucose, have been a notorious failure in maintaining such a condition. It, in most instances, is at best of only transitory value and is rapidly depleted from the venous channels. Acacia has been found to be a more stable medicament and will, ofttimes, re-establish and maintain vascular tone. The attendant reactionary dangers of acacia are of such frequency, however, that it is being abandoned.

Whole blood transfusions have been used with considerable success. If given in time, vascular volume and tone are re-established. There are, however, definite imperfections and shortcomings in the use of this agent. The time element of obtaining the necessary Wassermann-negative compatible donor has been the immediate cause for many fatalities. The red blood cells which are introduced into the blood stream are not the answer to the needs of restoring vascular tone. They constitute merely an added bulk which might further lead to a concentration within the body. The anoxia of tissues is not due solely to the loss of the vehicular agent to transport this hemoglobin.

It is surprising then, that it has taken so many years for physicians to realize and to use to advantage that portion of whole blood which is the beneficial agent. The introduction of human blood serum or plasma seems the most natural thing, as it contains all the virtues and none of the vices of other intravenous fluid medicaments. Within this are found all the attributes that are present in a normal environment, including a protein fluid which is not permeable to the capillary walls and one that will remain in the circulation.

LITERATURE

The experimental use of blood serum in combating experimental pathologic conditions has recently been done by Mahoney,[2] who produced traumatic shock in dogs and noted the advantages of serum over other intravenous agents. Bond and Wright,[3] after extensive animal experimentation, concluded that serum is alone capable of raising and maintaining blood pressure for any length of time. More recently, Levinson,[4] employing dogs, found it effective in combating shock, secondary to severe hemorrhage. Working on human subjects, favorable reports have recently appeared in the literature, the latest by Strumia,[5] who concludes that "the intravenous administration of blood plasma has proved to be an ideal means of restoring an adequate blood circulation in patients suffering from secondary shock, rapidly relieving the clinical manifestations." McClure[6] has successfully treated severe burns with blood serum.

A limited working experience reveals at once the almost miraculous therapeutic effects of this agent in the treatment of shock. The results obtained with serum or plasma are almost identical. Ease in obtaining the material, and reportedly rare shock attending serum administration make plasma the agent of choice.

Here, briefly, is a representative case:

CASE REPORT

A colored male, 40 years of age, entered the hospital four hours after a traumatic amputation

of the right lower extremity above the knee. On entrance, the man was in profound shock, exhibiting all the clinical signs and having a systolic blood pressure of 40. Serum was at once administered at the rate of 10 to 15 c. c. per minute. After 35 minutes, the blood pressure was 110/60. In one hour and fifteen minutes after the administration of 650 c. c. of serum, the blood pressure was 124/64. Three hours after entrance into the hospital, 950 c. c. of serum had been administered. The man had recovered from symptoms of shock, blood pressure was 170/90, and the patient was in such condition that he was considered a good surgical risk. Disarticulation of the thigh was done. During the operation the blood pressure dropped to 90/60, at which time intravenous serum was again started. Twenty minutes later, before the operation had been completed, the pressure had been re-established to 160/78. There were no reactions and no ill effects from the large amount of serum that the patient received. The postoperative course was remarkable and in 24 hours, the patient showed no ill effects and was normally taking nourishment.

In all the patients who have received serum while in a state of shock, response has been as immediate and as maintaining as in the example cited.

THE SERUM BANK

The establishment and maintenance of a serum or plasma bank is not attended with great difficulty or cost. The technic[7,8] is relatively simple and is not beset with the pitfalls of a blood bank. Blood is drawn as in the usual manner for giving an indirect transfusion, either citrated or noncitrated. Within 250 c. c. containers is an antiseptic agent of sufficient strength to make the solution bactericidal (in this instance tricresol making a 1:5000 dilution). The blood containers, after 24 hours (optional), are centrifuged and the plasma or serum content removed by suction into a sterile 2000 c. c. container. When this is filled it is proportioned in convenient 500 c. c. infusion receptacles. This is then placed in the icebox and is ready for immediate use. In pooled human serum, typing and matching is unnecessary and the immediate use while still cold has never given adverse reactions. Supplementing the bank is dependent upon the individual who has used the serum.

The dosage used is, of course, dependent upon the size of the individual and the severity of the condition. It may be generally stated that serum should be continuously administered until the patient has entirely recovered from the symptoms of shock. In most instances, 500 c. c. will suffice. The speed of administration is controlled by nature. Using a nineteen gauge needle, it will deliver by the gravity method, approximately 10 to 15 c. c. per minute. Plasma or serum may be diluted with equal amounts of saline or dextrose solutions and administered in this way. Heating of the serum should be avoided, as chemical reactionary changes may alter the serum.

SUMMARY

Serum, and more especially plasma, appears to be the ideal medium for the permanent establishment of proper circulation in shock. Its protein content and osmotic quality re-establishes normal conditions within the extra-cellular fluid, which is so necessary for the environment of the organism. Practical use has shown its efficiency in restoring circulation to a normal level even in those cases accompanied by a very large loss of blood. In severe hemorrhage, the loss of erythrocytes is a secondary factor. It contributes little to the state of shock, providing the volume of blood can be maintained. Further, it is easily obtainable, can be kept for long periods (months), is always ready for immediate use, is free of untoward reactions and can be readily transported as agitation does no harm. With the use of serum it is possible to avoid the emergency blood transfusion which is oftimes too late. In severe trauma it can be used prophylactically to prevent the occurrence of shock. It appears, and has been reported, to be lifesaving in severe burns that exhibit such a high degree of blood concentration. Its use will be a potent medical instrument in times of disaster and war.

CONCLUSION

The intravenous administration of blood serum and plasma has been completely satisfactory in treating patients exhibiting severe signs of shock. Abnormal pressure defects are corrected rapidly with the absence of adverse reactions.

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DISCUSSION

Dr. A. L. Culpepper (Alexandria): I feel that this is a very important and timely subject. I think it is going to be of great benefit and will have a definite change in the treatment of shock, particularly from hemorrhage. The subject has been admirably covered. Certainly, I have nothing to add, but I should like to emphasize a few points.

It appears accepted that shock following hemorrhage is due, not specifically or entirely to the loss of the red blood cells, but to volume diminution, lessened circulation, tissue anoxia and increased capillary permeability. If this condition is not reversed at once it may result in death. The principles of this theory of shock were emphasized some ten years ago by Wangensteen in the Journal Lancet, and at that time administrations of saline and acacia solutions were used. Immediate restoration of fluid volume prevents secondary shock. Delay in this restoration increases shock, and possibly, death. The electrolytes such as saline solutions are of definite value, but their efficacy is somewhat limited by the fact that they are lost from circulation by the lowering of the blood volume and osmosis. Serum fills the qualifications entirely except in cases of extreme loss of red blood cells, in which the hemoglobin has fallen to 20 to 30 per cent, so it is quite important that we have an immediate restorative and that is what we have in serum which can be given without delay. That whole blood is judged efficacious and is accepted, but it requires Wassermann reaction, it requires typing, and this delay is sometimes fatal; serum can sustain life in this interval and red blood cells if needed can be given as soon as whole blood can be procured.

Dr. Urban Maes (New Orleans): This speaker is one of those who has lived through the various phases of replacement therapy. The replacement of fluids has undergone many alterations. I do not want to go into a detailed discussion, but merely would like to make one or two suggestions. I think that Dr. Connell has pointed out an actual need and has properly stated in his paper that it seems peculiar that surgeons have taken such a long time to awaken to the realization that such a need exists.

I believe when we consider fluid replacement in detail, three losses must be rectified: the loss of fluid, the loss of plasma, and the loss of electrolytes. In shock or hemorrhage, replacement of the plasma volume is the crux of the therapeutic problem. Replacement of cells does not seem to be imperative, particularly in the presence of hemoconcentration.

The goal we are attempting to reach is to find some sort of solution that will stay in the circulation. As you know, the various solutions administered do become extravascular and there is no way of keeping them in the circulation on account of the alteration in the permeability of the capillaries.

We have been doing some work recently along these lines stimulated by Dr. H. A. Davis of the L. S. U. Department of Surgery. In order to get serum and have it available, we have been resorting to human ascitic fluid, and it does seem to me that in human ascitic fluid we have the help we need. It does contain the replacement elements necessary and in an available form. Furthermore, I believe replacement of a reduced blood plasma volume with human ascitic fluid is so simple and easy that we have a means of supplying the deficiencies and of supplying a fluid that is going to remain in the circulation. Thus far, in our observations, we have preserved human ascitic fluid for five months at a temperature of 5° C. and have transfused it after such a period of preservation without ill effects. There are very few hospitals in which there are not always a certain number of patients who are going to be tapped quite often, and the only thing necessary is to tap under aseptic precautions, collect the fluid in aseptic containers, be sure you have a syphilis-free patient, and then you have large quantities of human ascitic fluid ready for use, which fills all requisites necessary. There are one or two things we have to consider. The only human ascitic fluid which should be used is from patients suffering from cardiac decompensation or from portal cirrhosis of the liver. Be sure that the patient does not have carcinoma.

We add 50 c. c. of a 5 per cent solution of sodium citrate to each 1,000 c. c. of ascitic fluid. This prevents fibrin clot formation. Of course, the fluid should be cross-matched with the blood of the prospective recipient. Some work was done in Ravdin's clinic with lyophilized human serum, but he found such severe reactions that he became discouraged about its use. We have so far had 22 patients in whom ascitic fluid has been used, and I know of only one reaction of any consequence, and the patient came quickly out of that when transfusion was stopped. No typing had been done in this particular instance. If we want human blood serum in usable form, we can depend on

human ascitic fluid. With the growth of this idea, we may be able to dispense with blood banks, Russian canned blood, and all the other things we have been using.

Dr. W. F. Drummond (Shreveport): I would like to ask one question. Dr. Connell mentioned the use of an antiseptic in the blood plasma. Was this sulfanilamide or merthiolate?

If I understand the terminology correctly, serum and plasma were used synonymously. Serum and plasma are not synonymous terms nor can the two be used with the same degree of safety. There has been reported in the literature a number of reactions from the use of serum, whereas from plasma such are rather rare. Many of these reactions have been attributed to the use of heated serum and I think it wise again to caution the operator to administer plasma or serum at 4° C.

In large hospitals where a method of centrifuging whole citrated blood is feasible the administration of plasma is a simple matter, but in the smaller hospitals another method can be devised by allowing the cells from whole citrated blood to settle out and the supernatant fluid—plasma—withdrawn and administered as such.

The use of acacia should be limited to those cases where plasma or whole blood are not obtainable. It is also well to remember the difficulty encountered in cross matching after acacia has been administered.

Dr. O. W. McFarland (In closing): I feel that these serum and plasma infusions are primarily lifesaving procedures at the present time. On several occasions we have given quite large amounts, on one occasion 1600 c. c. in three hours. There are reports of this serum being kept as long as a year and no reactions followed its use.

I want to emphasize again that Wassermanns are not necessary. We have been using Wassermanns in our work with this; however, spirochetes do not live long at ice box temperature. Also, typing and matching of blood before the serum is given is not necessary.

For the antiseptic in our serum we use tricresol, 1:5000. It seems to take care of the situation very well.

I think the use of serum and plasma should be encouraged because it is very gratifying whenever you have a patient who needs immediate transfusion, to be able to take from the shelf, so to speak, the serum or plasma and give it as you would glucose or saline.

PRESENT STATUS OF THERAPEUTIC SHOCK IN PSYCHIATRY*

EDMUND CONNELY, M. D.
NEW ORLEANS

Schizophrenia and dementia precox have, for many years, constituted a major psychiatric problem. They are considered, especially dementia precox, as malignant psychoses, and a successful treatment for them has been sought by psychiatrists throughout the world. I hope that nothing I say will be construed as undue or destructive criticism, as I have no such thought, but feel that the recent enthusiastic therapeutic efforts by hospitals, clinics, and individual psychiatrists, are deserving of the highest praise. I am sure it is agreed that the development of an empirical treatment for any condition is putting the cart before the horse, but think any treatment which will give better results than the methods now in use, for conditions so serious, and so little understood, is worth while, and it may eventually help to a better understanding of the disease itself.

Treatment of schizophrenia by the insulin shock method, as introduced by Sakel, and irritative therapy with metrazol or camphor, as developed by Meduna, seem to offer considerable promise, although it is not understood just how they act.

A discussion of the development of these treatments, or the technic of their administration, is rendered entirely unnecessary by the mass of articles in the medical literature and, I am sorry to say, the lay press as well, indicative of the tremendous interest—we might say enthusiasm—with which the methods have been received by the profession both in this country and abroad. The statistics as presented in most of these articles, if accepted without due analysis, would suggest that the millenium is almost here so far as dementia precox or schizophrenia is concerned. Even taken conservatively, the figures given apparently indicate far more promise than other empirical treatments, such as colostomies; the

*Read before the sixty-first annual meeting of the Louisiana State Medical Society, New Orleans, April 23, 1940.

removal of infected tonsils and teeth; the administration of practically every variety of endocrine substance; the induction of the various types of hyperpyrexia; prolonged narcosis produced with barbiturates and other drugs, and so on, offered when first introduced, although all of these more or less recently discarded, or practically discarded, methods were brought out with reported cures, remissions and improvements.

STATISTICAL FINDINGS

The reports would likewise seem to offer more than psychoanalysis, which has been helpful, but no more so than the usual methods of psychotherapy generally employed. In estimating the value of any specific treatment of a disease, the result obtained must be compared with the results of other treatments. And the findings of individual observers in the use of it must be compared. Immediately, it appears that while the reported results with insulin and metrazol used separately, and sometimes together, are generally good, they are inconsistent, most markedly in the earlier reports. Not only did the European and American reports, as a whole, vary, the European being somewhat better than the American, but those of individual writers showed discrepancies. M. Muller got 70 per cent to 80 per cent full remission with Sakel's method in patients ill less than six months to one year; four out of 27 ill from seven months to one year (18.5 per cent); and three of 57 with over a year's duration (5.2 per cent). M. Marzyuski's figures were very much less. From America, Young reported on 31 insulin cases, 17 of less than six months' duration; 10 of six to 18 months' duration; and four over 18 months; 18 obtained remissions and four improved (70 per cent). Wortis obtained full or social recovery in 19 out of 30 insulin cases (63.3 per cent). Cameron, out of 17 patients, seven ill for less than six months and 10 from six months to four years, reported two apparent recoveries (11.7 per cent), with five others improved for variable lengths of time, a total improved group of 41.1 per cent. Nielson, with 39 patients, nine under one year's duration; 11 of from one to two years' duration; four of two to three years' duration; three of three to five years' duration; and 12 of five to 12 years' duration, had 77 per cent improvement in the first group; 27 per cent in the second; 25 per cent in the third; none in the fourth; and 16 per cent in the fifth. These figures, taken at random from earlier reports, are typical, and those on metrazol are so parallel that I need not burden you with further illustration.

These variations indicated that the statistics should not only be established by the treatment of larger series of patients and by the observation of treated patients a sufficient time to prove or disprove the permanency of the results obtained, but should be carefully analyzed for avoidable factors affecting their real accuracy and their usefulness for comparative purposes.

One was startled by the 88 per cent "definite remissions" of Dusik and Sakel, with 70.7 per cent "full remissions" in 58 new cases, and by many other reports, but as you reviewed the literature you realized that the various individuals and clinics were apparently using remission and other terms with different interpretations, that while some authors were careful to define their statistical terminology, most did not, and there was really no standard interpretation of the statistical terms. Remission did not mean a cure, but a change for the better, varying in degree with the author's ideas; recovery did not mean a cure; not even "cure" meant a cure, but all signified a certain change in symptoms for the better, which may or may not have been lasting, and varied in extent with the individual report.

Again, at first, and to a considerable extent still, the patients were obviously selected for their probable susceptibility to treatment, that is, young, newly developed cases far outnumbered the older chronic cases, which are admittedly poor treatment risks. Thus, it becomes apparent that the figures published did not represent the true reaction of the treatment on dementia precox or schizophrenia as disease entities, but its effect upon that part of the entity

most readily affected, the part which is also most susceptible to spontaneous remission. Further, it was not uncommon to see reports on cases of a few days, a few weeks, or a month's duration. Occasionally, an author specifically stated this to be as of the time of admission to the hospital or clinic, but usually one was left to suppose the actual duration from the time of onset of illness was meant, and, knowing as all of us with any degree of clinical experience do know, that it would be most unusual, if it ever happens, for a patient with dementia precox or schizophrenia to apply for treatment within a month of the true beginning of his illness, we cannot but realize that in our anxiety for good results we had thrown the gates wide open to diagnostic error.

The lack of a properly authenticated prognostic baseline in dementia precox or schizophrenia further complicates the situation. All of us, no doubt, have had more or less definite ideas as to the prognosis, and textbooks furnish certain estimates as to the prospective course of the disease, but actually there are few data to establish an authentic prognosis for comparison. Cheney's study of 500 cases from the clinical service of the New York Hospital, Westchester Division, White Plains, New York, treated by non-specific methods, read before the American Psychiatric Association in June of 1938, is of interest as it affords not only comparative data on the results obtained with the customary psychotherapy, but valuable information on the prognosis of the condition. At the same meeting, Romero and Ebaugh, and Malamud also, called attention to the lack of prognostic data and reported the results in extensive series of cases followed for an adequate time. Since, Rennie and others have made reports. These statistics, while inadequate, afford a clearer idea of the results obtained with older methods and give some basis for comparison with the new. Unfortunately, they represent the "run of the hospital patient," as it were, the entire group as an entity, and are not selected cases, as is so often the case in the reports on insulin and metrazol results, and have been followed over much longer periods than it is yet possible to follow the latter group.

DIAGNOSTIC CRITERIA

The variable diagnostic criteria are the most important of all factors influencing reports, as the difference in individual conceptions of the diseases affects the initial diagnosis and the appraisal of the final outcome of cases and makes tabulation difficult. We have all, more or less, come to accept the terms schizophrenia and dementia precox as being synonymous, and they are used synonymously in our hospitals and clinics, but in the conceptions of Kraepelin and Bleuler the conditions differed considerably. According to Rosanoff, schizophrenia not only comprised chronic deteriorating psychoses of adolescence and early adult life, but many mild, acute, recoverable and chronic but non-deteriorating psychoses as well. It was a more inclusive designation than dementia precox and represented a different conception, with many recoverable cases not considered dementia precox, which was a disease developed in adolescence or early adult life tending towards chronicity and deterioration, although Kraepelin did recognize a tendency in some cases to improve or recover. The acceptance of the two conditions, as the same, together with the lack of knowledge as to the exact nature of either one, has produced a state of more or less chaos, diagnostically speaking. It is not difficult to understand how readily conceptions may vary, and how easily individual workers may differ as to the demarkations of the groups, and contract or expand them to suit their own ideas, some broadening them to include cases ordinarily considered as neuroses, others restricting them to much narrower limits. With a disease so little understood, whose symptoms are practically all subjective, especially in the early stages, which is the most effective period for treatment, the most experienced clinician may make mistakes in diagnosis which must influence reports one way or another, and further affect results by adding or taking away cases from groups. Thus we are confronted with a mass of confusion. We are treating a disease, or diseases, the nature of which is

not understood, whose limitations are poorly, or at least loosely, defined, with symptoms that are practically all subjective, and an entirely indefinite prognosis, by methods which are purely empirical.

EVALUATION OF TREATMENT METHODS

It is agreed that the first requisite for evaluating treatment methods is an authentic prognostic baseline. We cannot establish this baseline with any degree of certainty by studying the results obtained in various hospitals and clinics alone, no matter how long we follow the patients or how thoroughly we re-examine them. We must establish some more or less standard terminology for designating results, and some more or less standard classification for the grouping of patients, not only those treated by special methods but all patients. Unless physicians use the same language in describing what they are doing, and as nearly as possible standardize their material, their results cannot be properly tabulated and it will be difficult to judge with certainty the merits of any new treatments developed as compared with those which have been in use.

As the first wave of enthusiasm following the introduction of the insulin shock and metrazol methods of treatment spent itself, the swing of the pendulum towards conservatism began. Observers during the past months have generally recognized the necessity for more coordinated studies, because of the statistical difficulties. They feel the need for more knowledge as to the physical effect of the treatments on the patient and its method of action, and an orderly investigation of the two methods has developed.

Reports on large series of patients not treated with specific methods, and followed over long periods, afford more and more data on what the usual prognosis has been. Writers are able to report on larger series of specifically treated patients with longer observation periods and with control series. Definite efforts to conform in the matter of diagnostic criteria and terminology are apparent, and accidents or possible ill effects are receiving careful consideration.

In the use of metrazol, accidents such as fractures of long bones and vertebrae or dislocation of the jaw, due to the muscular contraction, are reported with a certain degree of frequency, and some deaths occur. I have no statistics on the occurrence of fractures but they are frequent enough that some authors recommend x-ray examination of the spine whenever pain in the back occurs after metrazol. Deaths happen in about one-half of 1 per cent of the cases. The dangers of insulin shock are, of course, obvious and deaths have occurred. I do not have the degree of occurrence; one author, comparatively recently, reports three fatal results out of a series of 100 insulin cases, but I am sure this is exceptional. As to latent effects, they can not as yet be determined. A number of writers report changes in the brain tissue and cells in fatal insulin cases. These findings, and the facts that insulin is thought to act by reducing the oxygen supply of the brain, lead to the belief that it probably does produce permanent brain changes.

It would seem that it is yet too early to render final judgment as to the usefulness of these methods of treatment in psychiatry. Their use in conditions other than schizophrenia and dementia precox is under investigation, and to judge by the follow-up reports on cases of schizophrenia and dementia precox treated by the usual methods, it would appear that several years more of observation of treated patients is necessary before the permanent results obtained can be ascertained. The 70 to 80 per cent of "full remissions" have already, to a large extent, disappeared from the literature and statistics are much more conservative.

In May, 1938, one hospital reported 82.6 per cent "improved." The same hospital in January, 1939, reported 61.1 per cent as "showing some degree of improvement." These last figures are still comparatively high, and another hospital of the same state as the above reported 36 per cent showing various degrees of improvement in 100 patients treated. A representative private hospital reported 38 per cent improvement in a series treated with insulin as against 20 per

cent improvement with the other methods; but the older method cases were observed five years, and the insulin cases only eight months.

CONCLUSIONS

Unquestionably, the statistical reports have become more conservative as the cases have been followed, and apparently the estimations as to the degree of improvement are more conservative. It would also seem to me that the attitude of the majority of psychiatrists has changed from one of hopeful optimism to one of hopeful skepticism. There is no doubt that most of the observers still feel that these treatments should be continued in use and developed, and still feel that there is hope of their being more useful than the older methods of treatment. But they are very much more conservative in these hopes, and, as time goes on, are beginning to realize that the results obtained are more and more nearly approaching the results obtained by the older methods. They are also beginning to consider the possibility of permanent deleterious effects to the patient.

DISCUSSION

Dr. D. H. Duncan (Shreveport): I am inclined to agree with Dr. Connely in many of his statements. I particularly like the attitude of conservatism which he has developed toward pharmacologic shock therapy. I believe that in any new treatment, particularly one that apparently offers considerable hope for patients previously considered as offering a poor general prognosis, there is likely to be a definite over-enthusiasm shown. This is decidedly unfortunate. The treatment usually is extended in its use far outside the field in which it is best adapted and it is too often used by workers not well oriented in its use, both of these factors contributing to poor results and an over-critical and often depreciatory attitude toward the method. I think that this is the case with pharmacologic shock therapy. Early records did, no doubt, strike a more enthusiastic note than later follow-up of the cases will justify. The use of the method has certainly been attempted by many workers without sufficient training and experience in its use. Therapeutic technic, manner of selection of cases and evaluation of results vary considerably with various workers reporting. This, of course, does contribute to conflicting reports. Insufficient time has elapsed for adequate follow-up of patients treated. Even if the etiology and pathologic physiology of the so-called functional psychoses were known, the newness of the treatment methods would result in conflicting reports by various workers; and, since neither the etiology nor pathologic physiology of these reaction types are at present understood, and since a new and empirical method of treatment is being employed, it is to be expected that a period of considerable confusion as to the actual results being achieved might occur. This is, I believe, at present the case. Certain workers are, no doubt, still overly enthusiastic. Certain others are equally overly critical. The truth probably lies somewhere midway between these two extremes. My own experience and my contacts with other persons constantly using pharmacologic shock therapy during the past few years has led me to adopt a rather conservative attitude toward the method throughout my experience with it. I feel that any method of treatment in these or other conditions must, of necessity, have its limitations, and must be used in cases to which it is best applied. I do not believe the fact that treatment offers its best results in early cases and that cases of more than eighteen months' duration show an extremely high percentage of failure, condemns the method. In appendicitis and other medical conditions, the statistical results of treatment are based on treatment instituted as early as is possible in the illness. Certainly, I think it would be asking too much of any method of treatment to expect a good result in deteriorated cases. Sakel stated before one of our meetings two years ago that it was his impression that most of the cases being referred for insulin therapy were too far advanced. Certain types apparently respond best to insulin and certain others to metrazol. Individualization as to depth of coma, duration of coma, number of rest days, when to discontinue or re-institute treatment, is necessary. My own experience, extending over two years of actual constant use of both insulin shock therapy and metrazol therapy, has been such as to justify my continued confidence in the method. I realize that working in neuropsychiatric services in general hospitals, I would naturally see the earlier and therefore more hopeful cases, and that results are influenced particularly by this factor. The number of cases which I have observed and which at present are being followed after treatment is, of course, too small to be of great statistical value. However, the result both as to remission of symptoms and as to infrequency of injury, corresponds closely to the percentages quoted by various workers earlier, and in admittedly more enthusiastic reports. I am perfectly aware of the fact that if the cases of longer duration had been included in the material, that the results would have been much less gratifying. My present belief is that the present critical attitude will soon wear itself out just as did the previous attitude of over-enthusiasm toward these methods of treatment, and that a more wholesome, middle-of-the-road attitude will follow. I think that patients will be more carefully selected and that

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Due to lack of space, the author's bibliography of some seventy-five references had to be omitted.

both methods of treatment will, no doubt, be modified, or even perhaps some entirely different pharmacologic approach developed. Certainly, I do not believe that until something better is developed that we are justified in discarding, or in hesitating to use these methods in properly selected patients. I do not believe that any worker in daily contact with patients undergoing treatment and following them periodically after treatment is terminated, can doubt that they offer improvement superior to anything that we have had in the past.

Dr. C. P. May (New Orleans): The brain is nourished mostly by sugar and oxygen supplied by the blood. Insulin reduces blood sugar and shock ensues. Metrazol causes convulsions, respiration stops and no oxygen goes to the brain; shock follows.

Both insulin and metrazol shock treatment of the psychoses are dangerous, difficult to control and expensive.

Dr. Himwich and associates of Albany Medical College are using another method of treatment. They attach a breathing bag to the respiratory passages. Oxygen is introduced into the bag and gradually replaced by nitrogen. Convulsions occur and promptly cease on the re-administration of oxygen.

This method of procedure is safe, easily controlled and inexpensive and has given encouraging results in a number of cases.

Perhaps Dr. Connely will mention his views regarding this method in closing the discussion.

Dr. C. S. Holbrook (New Orleans): I think that recent treatment has done a great deal for dementia precox primarily and for other mental cases that have so long needed more attention. I think we have been, possibly, a little over enthusiastic, but from this wave of enthusiasm will come some good, no question about it. We must temper our anticipation of good results from the reports that first came out. I am still using the treatment. I may give it up and take up something else; at least I feel a bit more optimistic about treating actively schizophrenic cases.

There is a change we should note and that is the use of shock treatment in other than the schizophrenic and dementia precox patients. I am quite impressed with the good results that we get from depressives, and the treatment if it was not good in dementia precox cases, I think should deserve consideration in the treatment of depressives. In many, it shortens the period of invalidism by months. They get out of the periods of melancholia very much more promptly than otherwise. Whether they are subject to recurring manifestations of such reactions in manic depressive psychosis, I do not think we can say yet. Each one of these attacks, in the large majority of instances, can be cut short by metrazol treatment or insulin treatment. Right now, I get very much better results in the depressions than with any other treatment I can institute.

Dr. Walter Otis (New Orleans): Dr. Connely has given us a very interesting paper, up-to-date statistics and evaluations, and I think we of the neuropsychiatric group and the practitioner in general should realize that shock treatment is another form in our armamentarium that we may use in helping the neuropsychiatric cases. It is here to stay. It has been used for many years now, and we feel, therefore, that it is of aid. It has been a help in a number of cases; it has caused the recovery, as we term it in neuropsychiatry, of other groups. One can use the shock treatment, depending on the age, and the type you see. If one does nothing more than elevate the patient's condition from a lower to a higher plane in some cases, in others where the patient is permitted to return home, then again when they make a recovery, there is no reason why this treatment should not be continued.

In other series when patients are able to resume their daily routine of life, take part in all activities and have remained as recoveries for two years, I think we are justified in giving these forms of shock treatments. The method cannot be used as a panacea for all neuropsychiatric conditions. This must be borne in mind previous to admission.

The treatment is drastic, dangerous and dramatic, should be used with caution following a complete physical and neurologic survey. It must be given only by those properly trained.

Dr. Roy Carl Young (Covington): Dr. Connely has given us a paper presented in a way which considers the subject from all angles. He is very conservative in his statements, and at the same time has given a good account of the whole situation.

Shock therapy, as Dr. Duncan said and as Dr. Connely has said, has just reached a stabilizing point in its use. In a very short period of time the neuropsychiatrist will find the definite types of cases which will give the very best results. I think the method used by Dr. Connely and Dr. Duncan in their work is doing a whole lot about stabilizing opinions in this valuable type of treatment.

Dr. C. S. Miller (Jackson): I appreciate Dr. Connely's realization of the importance of diagnosis in these cases. Unfortunately, in our hospital work we do not get any cases that are two months to six months in duration. Most of the patients who come into the hospital have shown deterioration in their mental field. We do, however, receive a certain number of these patients into the hospital, and these individuals, as a rule, retain some insight. After a period of a short while, these patients recover spontaneously, or with treatment, and they go back without apparently any deterioration and clear insight into their condition.

I cannot agree with some of the others as to the wonderful results of insulin and metrazol treatment. We used insulin at the hospital for one year. This past year we had something like 120 or 125 metrazol cases. Now, we selected for all these cases definite dementia precox, and our results

were not satisfactory. I do think that a large number of the reported remissions, cures or recoveries, are in our depressives, psychoneurotics, and the ones I term as acute schizophrenic reactionary types. I think this accounts for the large percentage of recoveries or cures claimed. But when it comes to dementia precox where actual mental deterioration has taken place, in any patient who has had a psychosis existing for years or many months, I will be frank to say our results were not satisfactory.

I was glad to hear Dr. Connely say that they are leaning towards more conservative treatment and better selection of their cases, because if anything is to be gained, I think it will be in the very early manifestations of the disease. It is in these cases one may find any form of shock therapy and psychotherapy to be beneficial, but in older cases our results have been disappointing. Then, too, in early depressions it may have some value, for they too may respond to shock with some form of psychotherapy.

I am glad to see the attitude Dr. Connely has taken toward this type of treatment.

Dr. Edmund Connely (In conclusion): With reference to Dr. Duncan's remarks about early cases, I do not wish anyone to think that I am criticizing the selection of early cases, but I believe that we should realize in making estimates of treatment results, that we have been using the early cases, to a large extent, and that these patients are those most susceptible to spontaneous remission. So we will not arrive at false conclusions in comparing the statistics we now get, with those of the older treatments, as the later statistics include all cases, deteriorated as well as early. I believe, and I believe it is generally felt, that metrazol and insulin should still be used, and I feel that if we did not get good results in any except the early cases, that the two methods would still be worth while. Our present attitude is far healthier and more conservative than that of two years ago. The results of treatments are being studied not only in terms of immediate improvement, but in the duration of that improvement. In addition, the method by which the treatments act is being looked into, and possible deleterious effects on the patient are being considered.

The study of cases promoted by these methods has brought about a general recognition of variations in diagnostic criteria that we have been using, and has resulted in efforts to standardize our diagnosis more completely. Likewise, standardization of statistical terminology is coming about, more especially, studies in prognosis are giving us a great deal of light on the outcome of cases, and is showing us, at least many of us, that the results of the older treatments have been better than we realized. Through the use of insulin and metrazol a tendency towards the development of other methods of treatment has already appeared. Nitrogen inhalations based upon the theory that insulin acts through reducing the oxygen supply of the brain, have been tried, as Dr. May has mentioned. Likewise, electrical shock has been tried, and no doubt other treatments will be developed in the future which may, or may not be more useful than insulin and metrazol. The efforts to standardize the diagnostic criteria, and the studies in prognosis will give us a far better understanding of schizophrenia and dementia precox, and will probably cause at least some of us to change our ideas to a considerable extent. I find that my own, especially in regard to prognosis, have already been affected. So, aside from any immediate direct benefits to the patient resulting from the use of insulin and metrazol, the indirect benefits which will come from the more thorough studies, and the better understanding of the conditions, will justify the treatments.

X-RAY TREATMENT OF SUBACROMIAL BURSITIS*

OSCAR O. JONES, M. D.†
SHREVEPORT

I claim no originality for what this paper may represent. I am quoting freely from an article in The American Journal of Roentgenology and Radium Therapy by Isidore Lattman, July, 1936, of the Radiologic Clinic of Groover, Christie and Merritt, Washington, D. C. I wish, however, to add my experience in the treatment of a few cases of subacromial bursitis in accordance with the technic laid down by Doctor Lattman. I am therefore not attempting to bring you anything new in anatomy of the shoulder joint but perhaps to refresh our memory a little would not be amiss and in doing so I think we had better be reminded of Codman's original description of subacromial bursitis in 1908 in DaCosta's surgery. This points out that the deltoid and subacromial bursa is one and the same thing, in that when the arm is abducted the entire bursa is subacromial; when it is adducted a large portion of the bursa is subdeltoid. Codman stated that "it is not too much to assume that this bursa, like any other bursa, in response to the insult of trauma, overuse, unaccustomed uses, fol-

*Read before the sixty-first annual meeting of the Louisiana State Medical Society, New Orleans, April 24, 1940.

†From the Tri-state Hospital and Willis-Knighton Clinic, Shreveport.

lowing severe treatments or operation in that region, or infection, may become inflamed; may become overdistended with fluids; may be filled with fibrinous exudate; or its contiguous surfaces may become adherent."

Since his original paper Codman has published numerous communications on this subject and others have also contributed to its literature. There are those who believe that the symptoms usually ascribed to subacromial bursitis are really due to disease in the sheath of the tendons attached to the greater tuberosity of the humerus rather than to disease of the bursa itself; Codman in some of his later papers (1912) concurs in the former belief. Ross Golden states that in his experience the calcification occurs in the supraspinatus tendon. He quotes Codman as confirming it in the tendon and noting a calcified putty-like material composed of 20 per cent calcium carbonate and 80 per cent calcium phosphate and further that the close proximity of the tendon to the bursa has led to the expression—"subdeltoid or subacromial bursitis." These deposits vary in size up to ¾ centimeters in diameter and are often oblong when large. Golden also quotes the material as being composed microscopically of calcium imbedded directly in fibrous connective tissue and in part surrounded by a leukocytic infiltrate, several fields contained fibrocartilage and osteoid tissue.

ETIOLOGY

The cause is obscure, many suggestions have been attributed but none definitely proved. Trauma has been given as an important cause but experience does not very well substantiate this; however, it may be a contributing factor. Strain or trauma, overuse or unaccustomed uses, irritation from occupation, foci of infection, and infection of the bursa proper have been suggested. Endocrine and metabolic disturbances have been mentioned (parathyroid). It appears evident that there are no definite etiologic factors that can be accused with certainty.

PATHOLOGIC ANATOMY

Codman divides the disease into three stages: (1) Acute or spastic; (2) subacute or adherent; (3) chronic. There seems to be no definite line of demarcation between the subacute and chronic stages; they apparently merge into one another. If there has been an acute attack which has subsided and a second attack with the same symptoms on the same side, occurring within two to four weeks this may be called subacute. Although the attack shows all the symptoms of the acute stage it is not usually as severe. Codman's conception of the disease is that during this stage adhesions form in the bursa between the roof and the floor. Many authorities believe the bursa does not even enter into the reaction but rather that the disease is due to a lesion in the supraspinatus tendon and not in the bursa proper. There seems to be no unanimity of opinion on the pathology of this disease.

SYMPTOMS

The symptoms vary with different patients. The clinical picture is much the same whether or not calcareous deposits are present; the chief symptoms are pain in the shoulder joint, of varying degrees of severity radiating to the neck, arm, forearm and even to the finger tips. Limitation of motion in varying degrees, posterior and external movements of the arm are markedly restricted. The point of exquisite tenderness is usually in the region of the greater tuberosity of the humerus and downward to the finger tips or upward to the edge of the acromion process. In the patients that I have seen, elevation of the arm was very painful also. The symptoms of the chronic stage are much the same as the acute and subacute, only much less severe and respond less favorably to any form of treatment. They are usually of much longer duration when the patient consults the physician.

DIFFERENTIAL DIAGNOSIS

Subacromial bursitis is the most common ailment of the shoulder but must be differentiated from other conditions occurring in this area. If the history is one of trauma, fracture and dislocation must be ruled out. This can be done by careful history, physical examination and x-ray. Tuberculosis, syphilis, cystic bone lesion, giant cell tumor, osteomyelitis, malignancy and other condi-

tions might be mentioned which have to be ruled out. All these may be ruled out by the same procedures. In some instances both shoulders should be rayed for comparative purposes.

TREATMENT

Many forms of therapy have been used with more or less success. Rest and immobilization will often bring about a relief of symptoms in from six to eight weeks, with analgesics and opiates, if necessary, to carry the patient over the acute stage. A small per cent will go into the acute or chronic stage and the symptoms may subside and recur over and over again. Many surgeons and orthopedists who have written on this subject recommend non-operative treatment even when calcareous deposits are found. Operations are resorted to only in cases where other forms of therapy have been tried for months and have failed, and where the symptoms, particularly pain and limitation of motion, persist and the patient is incapacitated. Various forms of heat, including diathermy, have been used, as well as galvanic and sinusoidal currents, manipulations, massage, passive and active motion. Seemingly it must be admitted there is no specific form of treatment. Lattman has reported 20 cases of persons treated by roentgen irradiation to which I wish to add a few patients so treated according to the technic laid down by him. The experience I have had with patients so treated compares well with his experience. Anything that will relieve them of pain in a short time is worth considering in that the patients can be restored to their routine. The economic factor is also of great importance. Lattman states that it has been his experience for roentgen therapy to relieve the pain in the affected joint, thus permitting the patient to resume his normal routine more quickly than can be accomplished by any other form of treatment; my experience has been likewise, though not quite the number of patients treated and observation not as long.

Lattman states he treated patients as early as 1924 with beneficial results and since that time feels that experience has been sufficient to establish the value of this method of treatment in that he has had opportunity to treat a series of cases with physical therapeutic methods such as conductive and convective heat, diathermy, massage, manipulation, active and passive motion, as well as a series with roentgen therapy and finds the latter by far the method of choice and reports 20 patients so treated all of whom showed definite calcification; 14 of these had one treatment of 350 roentgens; four had two treatments and two had three treatments. Fifty per cent were male and 50 per cent were female. The average age was 46.3 years; the youngest 25, the oldest 72 years. Patients were examined two months after treatment and in three cases the calcification had disappeared. This of course may occur without treatment of any kind.

I have treated at the Willis-Knighton Clinic and Tri-State Hospital a series of 14 patients since March 25, 1938. The youngest was 30, the oldest 69 years; an average age of approximately 45. Six were males, eight were females; one of the cases was that of a female who had involvement of the elbow. I have had the opportunity to reray but one of my cases, 90 days after he had one treatment; the calcification had practically disappeared. The treatment was given May 17, 1938. He has had no further trouble but returned September 24, 1939 with a calcified bursa in the other shoulder which was given one treatment and he has had no further trouble.

Within the past 30 days I have contacted all patients treated, all reported no further trouble. Five of my patients had one treatment, six had two treatments and two had three treatments. One patient, a female 32 years old, had six treatments: March 25, April 13, and 28, 1938; she was relieved until November 7, when pain returned, she was treated that date and on November 13 and 27; she has had no further trouble. When first seen her shoulder showed considerable redness and swelling and was so painful to movement she carried her arm in a sling. The calcification in this bursa was very dense and the outline was rough.

The factors used in these treatments were as set forth by Lattman and were as follows: 200 peak kilovolts; 0.25 mm. of copper; 1 mm. of aluminum; field 20 x 20 cm; distance 50 cm; 350 roentgen units were given at each treatment. For the first 24 hours following treatment all patients complained of increased pain and aggravated symptoms but after about 40 to 48 hours their symptoms were much better. Lattman reports in his cases practically the same.

CONCLUSION

Roentgen irradiation of subacromial bursitis seems to justify the belief that this form of therapy will relieve the pain and restore function quicker than other methods of treatment. Lattman, at the time of his report, had been able to follow up his cases from one to five years and states that all have been relieved.

DISCUSSION

Dr. R. W. Cooper (Shreveport): Calcifications in and around the shoulder joints and other joints of the body have been described by many authors by almost as many names. Subacromial bursitis, or Codman's shoulder has been the most common one and is usually accepted. Other authors have called it peri-articular calcification, bursitis calculosa, bursitis calcarea, and peritendinitis calcarea. The clinical condition described by Duplay in 1870 and called peri-arthrite scapulo-humerale, or Duplay's disease, is thought by some to be identical with subacromial bursitis. Lattman gives Codman credit for the first clinical description of the condition in this country, for he has written most extensively on the subject. However, Carl Sandstrom of Stockholm, Sweden, said Painter of Boston was the first to describe the calcifications noted in roentgenograms of the shoulder. At the Fifth International Congress of Radiology, Sandstrom presented a very excellent paper, reporting 321 cases of calcifications. Some 259 cases showed involvement of one or both shoulders, 48 the hip joint, six the elbow, five the knee, six the fingers, three the toes, and two the wrist. He recognizes this condition as a clinical entity in itself, and says that it is a common disease of middle life frequently affecting the shoulder, but not infrequently affecting the hip and other joints. However, he chooses to call it peritendinitis calcarea, and did so in 1929 in his original publication. On microscopic examination of thirteen of these cases, some at autopsy, some from excision, he shows definitely that the calcification is not within the bursa, but in tendons, and sometimes in the wall of the bursa, but in no single case did he find calcification in the bursa itself. So he calls the disease peritendinitis calcarea, which I think is a good name. Other findings he showed were necrosis, narrowing of the lumen of the blood vessel, and he feels that calcification is quite probably secondary to local anemia resulting from the narrowing of the lumen of the blood vessels. With regard to etiology, some authors think infection is a factor, others insist that chronic trauma together with a disturbance in the calcium metabolism are causative factors.

I wish to compliment Dr. Jones on his excellent resume on the subject of subacromial bursitis and the presentation of his case. He follows Lattman's technic, giving a total of 350 r at the treatment, and occasionally three doses. Sandstrom prefers a fractionated technic. In the acute cases he gives 100 r two to three times weekly for six to eight doses. In my own limited experience I have followed his technic. The smaller doses do not cause the severe reaction in and around the joint as sometimes follows the larger single dose. I do not think there is a necessity for any one type of technic for it seems that good results are obtained in most cases where x-ray therapy of any kind has been used. It has been definitely established that x-ray therapy has been very efficient in relieving the symptoms and causing reabsorption of the calcium deposits; and I am convinced that it should be the method of choice in treating this condition.

Dr. Stakely Hatchette (Lake Charles): Dr. Jones has emphasized a non-surgical form of treatment for subacromial bursitis that may not be familiar to all of you here but which gives the patient complete relief. It is done without subjecting the patient to an anesthetic, an operation, without loss of time from the patient's occupation, and is as rapid as surgery in restoring useful function and freedom from pain to the patient's shoulder.

Until comparatively recently, all such patients in and around Lake Charles have been treated by surgical removal of these calcified bursae. However, in the past three years I have treated a few and, while I have not had quite as many as Dr. Jones, none of my patients have had pain longer than ten days after the beginning of treatment, and complete restoration of function of the shoulder and arm was accomplished in that time. While the calcifications in the bursae have not disappeared in all of my cases, every one of my patients has had 100 per cent relief from pain.

FRACTURES OF THE HEAD OF THE RADIUS*

JOHN T. O'FERRALL, M. D.
NEW ORLEANS

Fracture of the head and neck of the radius is regarded as an important subject to call to your attention and to invite your discussion, because of the frequent unrecognized and untreated cases encountered. Such fractures comprise from 15 to 20 per cent of fractures of the elbow and rank third in point of frequency of elbow injuries.

ANATOMY

A brief discussion of the anatomy of the head and neck of the radius may be in order. The radial head is an imperfect mushroom in shape with a moderate depression in the upper surface for its articulation with the capitellum. A circular ridge below the depressed upper half articulates with the lesser sigmoid cavity of the ulna. The entire head is, of course, entirely covered with articular cartilage, and in early life is almost wholly cartilage. Its epiphysis consequently greatly resists injury. Consolidation of this epiphysis occurs later than most of the long bones, taking place as late as 15 to 16 years of age. The neck of the radius, or stem of the mushroom, is about one inch long and is cylindrical in shape. The head and neck of the radius are held in place against the lesser sigmoid cavity of the ulna by the orbicular ligament which encircles the head and neck. The rupture of this ligament often occurs in fractures of the head of the radius and may alone be the cause of limited motion of the forearm, supination and pronation, because of strong adhesions.

FREQUENCY OF OCCURRENCE

Fracture of the neck and head of the radius is most frequent in early adult life. It may occur in childhood fairly frequently, but often there is an epiphyseal injury and it is seldom comminuted. It is about equally distributed between males and females. Its occurrence may be as the result of either indirect or direct violence; in the former the force is transmitted along the shaft of the radius to the head, driving it against the external condyle or capitellum. Usually, the weight of the patient is caught upon the outstretched arm with the hand pronated. The latter or direct violence occurs less frequently and is represented by a blow upon the lateral aspect of the elbow.

Frequently, fracture of the radial head is associated with some other bone injury, but here my remarks are limited to isolated fracture of the radial head and neck. A variety of this type of fracture is seen, from partial or incomplete, to severe comminution, or complete separation of the head from the neck.

SYMPTOMS

The symptoms, though variable, are often quite characteristic. The forearm is held in semiflexion and pronation; attempted pronation and supination are painful, crepitation is rarely felt over the lateral aspect of the elbow corresponding to the head of the radius; swelling may or may not be seen over the involved area, except in those cases resulting from direct violence, when it is generally present. When palpation of the head of the radius elicits marked tenderness, with or without crepitation, and supination of the forearm is limited and painful, diagnosis of injury to the radial head is fairly certain. X-rays showing good detail and made in several planes, anterior, posterior, lateral and oblique, are necessary to confirm the diagnosis. Emphasis is laid upon clear x-rays in several planes, particularly in cases occurring in children, when the epiphysis of the head of the radius is damaged. Often, a very small part of the cartilaginous epiphysis is involved. It has been suggested that separation of a small part of the cartilaginous epiphysis may become a loose body in the joint and play the role of a "joint mouse" at a later time. Fortunately, epiphyseal separation is rare. Wilson reports three cases in a series of 78 cases. Typical cases of fracture most often occur in children instead of the epiphyseal separations.

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*Read before the sixty-first annual meeting of the Louisiana State Medical Society, New Orleans, April 24, 1940.

TREATMENT

Improper and indifferent treatment of the fractures of the head of the radius may result in serious impairment of the function of the elbow. This loss of function is not confined to the loss of pronation and supination only but frequently involves flexion and extension as well. In the simpler cases, such as partial fracture of the radial head; incomplete fracture of the head or neck, impacted fracture of the head without comminution; and damage to the epiphyseal cartilage without displacement, accurate diagnosis suggests the treatment. The forearm should be gently supinated and the elbow fully flexed, namely, the position which has become known as the Smith-Jones position. This position is often comfortably retained by a strap of adhesive plaster around the flexed extremity well above the elbow and a loop of unbleached bandage about the wrist and tied behind the neck. This dressing permits local application of heat or cold and does not interfere with posttraumatic swelling. The flexure of the elbow should be protected from the maceration which so often results from the intimate contact of the skin surfaces, by inserting gauze, sheet wadding and powder. This fully flexed position should be maintained for a period of three to four weeks. Gentle motion of the joint and forearm, however, should be started after about one week, the arm being returned to its original position each time after gentle active and passive exercise. As progress is made in restoring function, heat and massage, with muscle training, are indicated. With such careful handling, end results are satisfactory and normal function is usually restored. A mistake often practiced is the use of force in hastening motion. The joint structures resent the trauma produced by force, and insult is added to the already existing injury. As swelling, tenderness and pain subside, the position of full flexion can be lessened so long as the patient can actively return to the original fully flexed position. This is the criterion for permitting progressively increased activity.

The more serious types of fracture of the radial head include those in which a single fragment is displaced and comprises more than half of the lateral aspect of the radial head; severe comminution of the head in which several fragments are displaced; fracture through the neck of the radius with displacement of the head and separation of the upper epiphysis of the radius with displacement of same. These types of fractures require operative measures as the method of choice for the attainment of good functional results. Early operation is desirable. It has been found that those patients subjected to operation within the first few days after injury offer the best opportunity for good postoperative function.

OPERATIVE PROCEDURE

There are two operative approaches to the head of the radius, but the postero-lateral incision is preferable as it more easily exposes the head and neck of the bone. This incision is made over the radio-humeral joint, beginning just above the capitellum and extending to a point about one inch below the head of the radius. The small posterior interosseous nerve is identified between the heads of the supinator brevis and is the most important structure to be encountered. It is retracted downward and the head of the radius exposed through the capsular ligament and capsule. If the lateral half of the radial head is displaced, it should be removed, leaving the mesial half to articulate with the sigmoid cavity of the ulna. If more than half of the head is displaced, then the entire radial head should be resected. If comminution of the head has occurred, then all comminuted fragments should be removed. It will often be found that small fragments have been displaced into the flexure of the elbow and in fact throughout the joint cavity. Careful search for all fragments is necessary before closing the wound. In children the displaced epiphysis may be replaced onto the head of the bone and be made to remain in place by careful closure of the wound and fixation in the fully flexed, supinated position. If the orbicular ligament, holding the radius in apposition to the ulna, is found damaged, same should be repaired. Careful hemos-

tasis is essential to avoid additional opportunity for fibrosis and consequent limited motion. After the usual closure of the wound, the position of full flexion and supination seems desirable and is best maintained by means of a light plaster of Paris posterior splint and a Jones loop about the neck. Early motion, one week to ten days, followed by gentle, gradually developed motion, as described for the simpler types of fractures of the head and neck of the radius, is carried out. Good functional results have rewarded many patients and surgeons for their patience and painstaking after care of such injuries. It can be safely said that the end results in such fractures are in direct ratio to the scientific care given them.

SUMMARY

1. Fracture of the head or neck of the radius is a serious injury and requires careful diagnosis and painstaking treatment.

2. Conservatism is indicated in the simpler types of fracture in which fragments have not been displaced.

3. Early and complete operative removal of displaced fragments is most desirable and offers better opportunity for good function. This is also true in epiphyseal separations.

4. Very careful hemostasis is essential and avoidance of injury to the interosseous nerve must be observed.

5. Personal supervision should be given to the physical therapy and same should be initiated no later than one week to ten days after conservative or operative treatment is started.

6. The Smith-Jones, or fully flexed supinated, position is desirable to maintain satisfactory position of fragments and to avoid limited motion.

CASE NO. 1, ELEVATOR OPERATOR

On November 12, 1938, he was struck on the right elbow by the fender of a passing automobile. Has suffered severe pain but considered the injury a bruise and did not report to his physician for two days, who then referred patient for treatment. X-rays showed a comminuted fracture of the head of the radius with considerable displacement of the fragments. Operated on November 15, by postero-lateral incision; removal of all fragments; no further pain. After physiotherapy, was discharged for duty December 30, 1938. Six weeks' disability.

CASE NO. 2, MUSIC TEACHER

On November 5, 1935, was thrown from a horse, injuring the right elbow. She consulted her family physician, who referred her for treatment. X-ray showed the head of the radius severed from the shaft and comminuted, the fragments considerably displaced. Operated on November 7, 1935, by postero-lateral incision; slight postoperative pain. Physiotherapy. She was discharged for duty December 13, 1935, after five weeks' disability.

CASE NO. 3, TEACHER

While going downstairs April 8, 1938, she slipped and fell headlong, injuring her right elbow. She was seen by her physician, who applied a temporary splint. X-ray showed fracture of the radial head wth two fragments displaced forward and apparently in the flexure of the elbow. Operated on April 9, 1938, postero-lateral incision; all fragments removed; no postoperative pain. Physiotherapy. Discharged for duty June 6, 1938, slightly less than two months' disability.

CASE NO. 4, CHILD

On December 4, 1928, she fell down the steps, twisted her arm and struck the elbow against the steps. There was immediate, severe pain in elbow joint. X-ray Baptist Hospital showed chipped fracture head of radius (left), no displacement. Fixation in Smith-Jones position. Heat and active motion begun in slightly less than one week; rapid return of function. Discharged for duty in two weeks; no residuals.

DISCUSSION

Dr. W. Rogers Brewster (New Orleans): Very frequently, a subject of this kind, in which the treatment is more or less recognized as being rather clearly delineated, does not come to our attention sufficiently often, and it is good to refresh our memories at times. What Dr. O'Ferrall has said covered the subject in so far as treatment is concerned, and the only thing of importance which might be stressed a little more is the problem of recognition of these fractures. As Dr. O'Ferrall said, this depends largely on certain symptoms in combination with adequate and proper x-ray. It should be always borne in mind in relation to injuries around, or in the elbow, and there is one particular injury which I have seen occur and in which the associated fracture of the head of the radius, or displacement of the head, has been missed, and that is those fractures of the upper and middle third of the ulna with displacement. Displacement of the head of the radius associated with that type of injury should always be considered as being present until proved otherwise.

Dr. George C. Battalora (New Orleans): Dr. O'Ferrall has admirably covered the subject of fractures of the head of the radius. There are a few points that I would like to stress. First, the time of operating on these patients is extremely important. The decision for operating should be made early. We should not let the case drag along through a period of doubtful conservative treat-

ment and then decide to operate. We are not going to get as good results as if we did the operative procedure early.

The age of the patient has a great deal to do with the type of operation to be done. In young individuals, we rarely see the comminuted types of fractures as in adults. If an operation is necessary, we should do an open reduction; in older persons, we should excise the head. We would not want to excise the head of the radius in a child. I had one case in which I excised the head in a young girl. She developed a marked increase in the carrying angle and a late ulna nerve paralysis. This latter condition was corrected by an anterior transposition of the nerve.

Another point arises in cases where we must decide either on a partial or complete excision of the head. It is better to excise the entire head, for if a partial excision is done there is great likelihood of development of arthritic changes between the remaining portion of the head of the radius and the capitellum.

Dr. H. D. Morris (New Orleans): I would like to call attention to the approach popularized by Dr. Boyd, of the Campbell Clinic, for excision of the head of the radius. Dr. O'Ferrall mentioned various approaches now in use, and the approach which Dr. Boyd presented in the Orthopedic Section of the American Medical Association last June is a posterior approach over the lateral condyle of the humerus. Incision is carried along the upper third of the ulna and the supinator is reflected subperiosteally, carrying the interosseous branch of the radial nerve anteriorly, completely out of arm's way, and in complicated fractures where the upper third of the ulna is fractured, it allows access to this fracture.

The other thing I would like to mention is radial deviation of the hand following excision of the radial head. This complication was emphasized by the recent publication from the New York Orthopedic Hospital. They recommended purse-stringing the tissue between the capitellum and the radial shaft and immobilizing the hand in ulnar deviation to prevent this complication. I wonder if Dr. O'Ferrall has met this complication in his series of cases.

Dr. John T. O'Ferrall (In closing): I mentioned in my paper that attempt should be made to replace the epiphysis on the end of the bone and the arm fixed in the Smith-Jones position.

With reference to removal of part of the head, I tried to emphasize the fact that if more than half of the radial head was displaced, then the radial head should be removed. If the mesial aspect, or more than half is displaced, it should be removed. The remaining mesial head can articulate with the sigmoid cavity.

I appreciate Dr. Morris' remarks with reference to the new approach to the elbow with which I am not familiar.

ENCEPHALOGRAPHY AND THE NEUROPSYCHIATRIST*

DEAN H. ECHOLS, M. D.†
NEW ORLEANS

Encephalography is a diagnostic method for roentgenographic visualization of the brain in which cerebrospinal fluid is replaced by air through the lumbar route. Briefly, the procedure consists of: Spinal puncture with the patient in the sitting position; withdrawal of three to six ounces of cerebrospinal fluid and replacement by injection of an approximately equal amount of air or other gas; and roentgenography of the head with the patient lying or sitting in various positions. This permits adequate visualization of the entire ventricular system and the subarachnoid spaces over the surface of the brain.

Encephalography probably should be considered the fifth most important diagnostic procedure available to the neuropsychiatrist, the first four being history taking, observation of the patient, neurologic examination and spinal puncture. If this assumption is true, one would be justified in concluding that encephalography is in common use. On the contrary, in most hospitals in this country encephalography is practically never employed. It is not my purpose to criticize the neuropsychiatrists as a group for their ultra-conservative attitude regarding roentgen ray examination of the brain, because the explanation for their hesitancy in accepting this as an aid in diagnosing obscure brain lesions is easily understood. Not only is the procedure exceedingly painful, but in certain diseases it is also dangerous. Moreover, the idea of spinal fluid replacement by air is a relatively recent one, being first conceived by Dandy[1] in 1919. Since then, the technic has undergone minor modifications, so that it has been only within the last few years that the method and the indications for its

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use have been sufficiently standardized to warrant its use by all neuropsychiatrists. It is my purpose to outline a technic of encephalography, its indications and contraindications, and to encourage neuropsychiatrists as a group to adopt this procedure as a simple, safe and valuable diagnostic measure.

INDICATIONS

Encephalography should not be used instead of, but as an adjunct to, painstaking neurologic or psychiatric examination. Since the use of this procedure can easily be abused, it should be considered only if the neuropsychiatrist has been unable to arrive at a specific diagnosis with the other methods at his disposal. This statement intends not to minimize the value of this test, but instead, to encourage its use. Most writers[2, 3, 4] agree that encephalography is indicated in all cases in which symptoms of obscure brain lesions are manifested if there is no evidence of increased intracranial pressure. It is obvious enough that if a clinical diagnosis of brain tumor, brain abscess or intracranial hematoma can be made, there is no reason for the performance of encephalography except at the election of the neurosurgeon. In the presence of an intracranial mass, ventriculography, that is, the injection of air directly into the ventricles through a trephine, is a safer procedure.

It is my opinion that all patients suffering from epileptic attacks which do not cease under adequate therapy should be subjected to encephalography. Incidentally, in this particular disturbance, air injection sometimes has a therapeutic effect. Grant[5] and many others believe that the results obtained in epileptic patients subjected to encephalography are beneficial though transitory.

Other applications of this procedure are in patients with obscure mental diseases including character and personality changes as well as bizarre psychoses, severe intractable headache, congenital brain defects, inflammatory or degenerative lesions of the cerebrum, and psychoneuroses. Many patients with posttraumatic encephalopathy should have encephalography for therapeutic and medicolegal reasons. Also, the time will probably come when patients with non-classified psychoses will not be permanently committed to psychopathic hospitals until after an encephalogram has been made. Spinal air injection should also be resorted to, for academic reasons, in patients suffering from mental deficiency.

CONTRAINDICATIONS

It is generally agreed that encephalography is contraindicated in all cases where intracranial pressure is greatly increased, such as in the presence of intracranial tumor, abscess or hematoma. The reason for this is that lumbar puncture in such patients might cause further compression of the blood supply of the medulla oblongata. Only at the discretion of the neurosurgeon should encephalography be employed in the patient with choked discs. Encephalography should ordinarily be avoided in patients over fifty years of age[6]. Infants tolerate the procedure well.

TECHNIC

Because encephalography causes severe pain in the neck and head, often accompanied by nausea and vomiting, it is desirable to stop the intake of fluids or solids eight hours before performing the test. Three grains of pentobarbital sodium (nembutal) may be given a few hours before starting the procedure. Just prior to spinal puncture the administration of 1/100 grain of atropine sulfate will assist in decreasing the unpleasant symptoms.[7] Whereas it is much simpler to perform encephalography without general anesthesia, children and uncooperative adults should be put to sleep.

Numerous variations in technic have been suggested, but the procedure can be performed with utmost simplicity. The patient walks to the treatment or roentgen ray room, where the test is done. He is asked to sit astride an ordinary straight back chair, which is placed at the head of a table on which he rests his folded arms and head. The back is exposed and cleaned with antiseptic solution. After the skin has been anesthetized with novocaine, a spinal

puncture is performed in the third or fourth lumbar interspace using an 18 gauge needle. A three inch piece of rubber tubing is attached to the needle after the stilet has been withdrawn. The escaping fluid is caught in a one ounce medicine glass by an assistant. After the liberation of approximately 10 cubic centimeters of fluid, 10 cubic centimeters of air, which has been aspirated into a syringe through a piece of sterile gauze, is injected through the rubber tubing. This procedure is continued until 120 cubic centimeters of fluid, in the average case, have been replaced by an equal amount of air. The spinal needle is removed and the patient is put on a stretcher. The roentgen ray films should be made within an hour. If the standard table is used with the roentgen ray tube overhead, the patient lies on his back for an anteroposterior projection. The patient then lies in the prone position for a postero-anterior view. With the patient still in the prone position, lying first on one cheek and then on the other, lateral views are made. It is desirable to make stereoscopic films. In some hospitals the films are made with the patient sitting up with the head against a vertical Potter-Bucky diaphragm. Since each method has its advantages, the ideal procedure would be to make films with the patient both lying down and sitting up.[2]

REACTION TO AIR INJECTION

As soon as the air reaches the cervical region and cisterna magna, the patient suffers severe neck pain and headache. With the continuance of the procedure, the patient may perspire profusely, and there may be nausea and retching. Fainting rarely occurs. Upon returning to bed, the patient wants to lie quietly for from 12 to 48 hours, as pain is aggravated by movement of the head. Codeine and aspirin usually suffice for analgesia. Fluids and solids can be given when requested, and the patient may leave the hospital as soon as he desires. The average stay is about three days, even though a little air is still present in the head at the end of this period.

Probably one of the reasons that encephalography has not enjoyed greater favor among neuropsychiatrists is the belief that it frequently results in death. There is no basis for the existence of this opinion. If a patient does not have a serious brain disease such as tumor, aneurysm or advanced arteriosclerosis, the risk is practically negligible. Pancoast and Fay[3] found that the mortality, following encephalography in a series of 1,529 cases collected from the literature from 1921 to 1928, was 1.2 per cent. In Davidoff and Dyke's series of 4,000 encephalograms the mortality was only 0.22 per cent. Grant[5] had only one death in 325 cases.

CONCLUSION

It should be emphasized that because of its simplicity of performance, its negligible mortality and its adequate visualization of the brain, encephalography is strongly recommended as an important aid to neurologic diagnosis in obscure brain diseases.

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3. Pancoast, H. K., and Fay, R.: Encephalography: Roentgenological and clinical considerations for its use, Am. J. Roentgenol. & Rad. Therap., 21:421, 1929.

4. Pendergrass, E. P.: Indications and contraindications of encephalography and ventriculography, J. A. M. A., 96:408, 1931.

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DISCUSSION

Dr. Gilbert C. Anderson (New Orleans): Dr. Echols has emphasized an important diagnostic procedure, which, as he says, is undoubtedly used much less frequently than it might or should be. I do not think the performance of encephalography requires any extended training, or any intricate machinery or apparatus or equipment of any sort. As far as the technical performance of the test is concerned it can be done by anyone capable of doing spinal puncture, who knows how to handle that sort of procedure. However, the interpretation of the filling requires experience.

Dr. Echols says the mortality is practically nil, but that, of course, depends to some extent, in this procedure as in any other, upon the selection of patients. There are only a few, relatively speaking, in whom this procedure is contraindicated. Certainly, I should be very reluctant to make or attempt to make, an encephalogram on

a patient with choked disc. If I, or the consultant, felt that we were dealing with a true choked disc that was the result of increase in intracranial pressure, I should be very loath to empty the subarachnoid space of its fluid, and I say this with regard to any condition in which increased intracranial pressure is present, especially in lesions of the posterior fossa in which we so often have been told spinal puncture is contraindicated. As a matter of fact, the deaths that have been reported by Dr. Moersch of The Mayo Clinic following spinal puncture, were in supratentorial lesions, and they considered the menace there was a prolapse or jamming the brain stem in the incisura of the tentorium rather than medullary prolapse. At any rate, where intracranial pressure is definitely increased, I would certainly prefer to carry out ventriculography, in which air is introduced into the ventricle by means of a trephine opening.

However this entails an operative procedure, a major operation, with scrupulous attention to surgical technic, and carries a definite mortality which is a little high for a procedure only diagnostic in value.

The difficulty in encephalograms in general is failure to get a filling of the ventricle with air. Unless the patients are prepared with sedatives and atropine, they are apt to have a fast pulse, disturbances in respiration, and sweat profusely on the table, and very often the blood pressure goes down and they vomit, but seldom lose consciousness. The operator may be inclined to stop when he has drained 80 to 90 c. c. of fluid and replaced it with air, and then get a filling. If the system is not well delineated, the interpretation will be difficult, and therefore, I think it is necessary to carry the procedure as far as possible and one will be surprised in many cases at the amount of fluid that can be withdrawn. Manipulation of the patient's head from side to side and forward and backward after apparent complete drainage often produces a surprising additional amount.

Dr. Roy Carl Young (Covington): Dr. Echols has given us a very clear concise view of the procedure known as encephalography. It is a procedure, as he stressed, of great value in neurologic diagnosis, one that in properly selected cases gives a value we get in no other way, a procedure that should not supplant the most careful neurologic examination, and when I say neurologic examination I include roentgenograms, spinal fluid studies, spinal fluid analyses, visual fields. It is a fitting procedure in neurologic diagnosis and has a definite therapeutic value as well as diagnostic value.

Its use is important in cases of epilepsy. I usually treated these patients over a period of time and if the person did not respond to treatment then I invariably advocated encephalography for diagnostic aid and therapeutic effect. It is of value in trauma of the head, in diagnosing the amount of injury and also because of its therapeutic effect. It certainly does decrease the symptoms of cortical irritability.

One very important phase of encephalography is close cooperation required between the radiologist and the neurologist as correct interpretation of your roentgenograms after they are made is very important.

Dr. H. Randolph Unsworth (New Orleans): It has been my good fortune to see some encephalographic work and I am also in agreement with Dr. Echols that in expert hands it is probably a harmless procedure. I doubt, however, that it is such an innocent procedure in incompetent hands. I have been impressed with the marvelous view the encephalogram gives, and further, as a diagnostic aid it has become, in my mind, indispensable in neurologic diagnosis. Therapeutically, I am not prepared to evaluate the method. I will say that it has appeared to be helpful in certain of the convulsive phenomena. It certainly brings to light structures in the cerebrum that apparently the ordinary x-ray plate does not reveal. This was very forcibly impressed recently. Dr. Echols did an encephalogram on a patient who had been treated for epilepsy for probably eight years. The encephalogram of that particular case was most enlightening and showed a tuberculoma. I am further of the opinion that in certain of the psychotics, certain of the encephalitics, therapeutically we may expect results that we have been unable to obtain in these patients.

NEW ORLEANS
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THE NEW YEAR

The new year starts with the world aflame. Grim war is reaping its toll in most of the so-called civilized countries of the world; nearly all Europe and most of Asia is afire. Only in the Western hemisphere is the horror of war a thing remote and distant but even oceans separating the United States from the two combat continents does not prevent our feeling the repercussions. The United States necessarily is preparing to defend itself should it become incriminated in a future struggle. All the preparation will have a profound influence on our economic and our professional life; taxes will be increased necessarily, funds will have to be raised to support a large army and the necessary armaments, professionally many doctors will be called into service and there will be doctors in civil life who will have to work over time who will be called to perform extra duties and who will be employed continuously in their professional occupations.

All this preceding paragraph seems pessimistic. However, we have much to look forward to in the coming year. After all, our families are intact, our work is interesting and our pleasures, few though they may be, are a relaxation and a joy. Grossly the coming year seems appalling; minutely to the individual, happiness and comfort will probably be his lot in the coming year. We sincerely hope so. To all of our readers the Journal offers felicitations and the hope that the coming year will be a prosperous and happy one.

MENVILLE HONORED

The Journal is filled with pride at the realization that the Chairman of the Committee under whose auspices it is conducted, has again been signally honored. Dr. Leon J. Menville was selected as president of the Radiological Society of North America at its annual meeting which was held the first of December in Cleveland. This is an honor which is outstanding. This radiologic society is composed of the leaders in roentgenology in the United States. The selection of Dr. Menville indicates that he is well liked personally, that the members have a high regard for his accomplishments in roentgenology and that they have faith in his ability as an executive.

Not only should the Journal feel proud of this honor conferred on its Chairman but the members of the Louisiana State Medical Society should likewise take vicarious pleasure in having one of their former presidents of the State Medical Society

elected to this outstanding office. It is just further proof that doctors of Louisiana are among the best in the country and that the appreciation of their professional skill is widespread. We medical men of the State wish our distinguished confrere every success in his administration of this great radiologic organization.

THE GRADUATE MEDICAL ASSEMBLY

The growth of the New Orleans Graduate Medical Assembly has been truly spectacular. Starting in a small way four years ago it has increased its attendance by leaps and bounds and it has apparently appealed to a very large number of men, not only throughout the South but also from the North and Midwest. This is a very practical demonstration that the medical man is anxious and eager to keep up with the advances in medicine and to review the latest and most outstanding features in his professional field.

The meeting which will be held March 3-6, 1941, should be the largest one that has ever been conducted. This is said advisedly because the list of guest speakers is outstanding and the character of the presentations that these speakers will make is guaranteed by their professional reputations. It would be impossible to enumerate here the names of the eighteen outstanding essayists. Men like Paul D. White, Paul A. O'Leary, Owen H. Wangensteen, Ernest E. Irons, Maurice Pincoffs, Charles F. McKhann and Cecil S. O'Brien are known not only locally but nationally. Only a few of the guest speakers have been mentioned but the others are equally well known and prominent in medical circles.

The thinking medical man will realize and appreciate that this medical assembly will give him an excellent opportunity to find out about the advances in medicine and surgery; it will give the hard working professional man an opportunity to relax from the daily grind and it will give the doctor whose contact with other members of his profession is limited an opportunity of talking over his problems with his fellow practitioner and with men who are known as teachers and scientists. The small registration fee includes not only the lectures but also the round-table luncheons, the smoker, the scientific exhibit and many other features. It will be money well spent.

HEART DISEASE AND OPERATIONS

Very often the practitioner and the surgeon are confronted with the problem of a patient who has organic heart disease and who requires an operation, which operation may be an immediate necessity or may be an operation of choice. Most physicians know that there are innumerable operations that are delayed or not performed because of fear of the patient or by the doctor. Some years ago Marvin[1] wrote "For purposes of anesthesia and operation a heart that is damaged but that is carrying on an adequate circulation under normal conditions of life is the equivalent of a normal heart." This implies a heart that is not in failure. Practically the only type of heart disease in early and mid-life which is dangerous is syphilitic heart disease with aortic insufficiency and angina pectoris in later life, largely because these two conditions may be associated at any time with sudden death.

Patients who are in failure do present a very definite risk, but the surgical mortality in a large group of carefully studied cases was only 5.5 per cent. These people, however, were given bed rest, when possible, for at least three weeks after their failure had taken place. Decompensation must be considered a bar to selective operation and must be properly taken care of in necessary emergency operations.

Patients who have healed myocardial infarction, or angina pectoris, on the whole do not present any very great difficulty, according to Blumgart.[2] Again in a large series of patients, 257, recently reported with coronary arteriosclerosis, the death rate was only 4.3 per cent after or during

1. Marvin, H. M.: The heart during anesthesia and operative procedures, New England J. M., 199:547, 1928.
2. Blumgart, Herrman L.: Cardiology: I. The management of cardiac patients who require major surgery. II. The treatment of cardiac arrhythmias, New England J. M., 223:765, 1940.

operation. However, it must be borne in mind that whenever possible an occlusion must have at least a period of three months to heal before operation should be considered. Coronary thrombosis occurs after operation in older people in a considerable number of patients and this possibility should always be considered because of the fact that shock, dehydration and hemorrhage may precipitate an attack of coronary thrombosis. This is a frequent occurrence in the arteriosclerotic diabetic patient. There is always danger, incidentally, of a hypoglycemia precipitating an infarction so that insulin should be used cautiously and the blood sugar watched carefully.

Blumgart has some very excellent suggestions in regard to the preoperative and postoperative care of the heart patient. It is advisable to give small doses of barbiturates for a few days prior to operation, phenobarbital ½ grain three or four times daily. Small doses should be used rather than larger doses which may have an unfavorable synergistic action when morphine is given before operation, plus the anesthesia, which may cause trouble. He cautions against giving large quantities of saline solution by vein or hypodermoclysis, particularly to the patient who, before operation, has been on restricted salt and fluid intake. When fluids are given into the vein they should be given slowly, not more than 20 c. c. per minute, and of course in the presence of edema it would be wise to give glucose solution alone and not have it combined with saline. If it is given at this slow rate it has very little effect on the cardiovascular functions. Digitalis should only be employed when there is congestive heart failure or auricular fibrillation. Oxygen is an excellent prophylactic given after operation in those patients in whom the cardiac reserve is limited. Lastly, nitroglycerine in a patient who has had attacks of angina pectoris may be given 1/500 grain every half hour before operation and during the operation, if it is done under local anesthesia.

The reviewer also calls attention to the fact that drugs which are often used before and after operation may affect the heart unfavorably. Notable in this group are the pituitary gland preparations which may precipitate angina pectoris and collapse in an older patient. Adrenalin is distinctly contraindicated in people who have coronary arteriosclerosis. The use of carbon dioxide mixture is ill advised unless the amount given can be very carefully controlled. The physician should not forget that atropine has a breaking effect on the vagus and if it is given in fairly large doses to lessen bronchial and upper respiratory tract secretions it may produce an undue elevation of the heart rate, particularly dangerous in patients with auricular fibrillation. Reference has already been made to the use of insulin and the production of hypoglycemia; cocaine and novocain are also drugs which should be used with extreme caution in patients with coronary arteriosclerotic disease. Because they are readily and rapidly absorbed they may cause cardiac arrhythmias and at times ventricular fibrillation and death.

Boiled down to a few words, this review of Blumgart definitely suggests that the young person with heart lesions is an excellent operative risk. The old person with arteriosclerosis of the coronary vessels is, on the whole, a subject who must, during operation, before operation and after operation, be observed and watched most critically but on the whole old people can go through operations with a surprisingly satisfactory degree of safety.

HOSPITAL STAFF TRANSACTIONS AND CLINICAL MEETINGS

TOURO INFIRMARY
New Orleans

A meeting of the Medical Staff of Touro Infirmary was held on October 9, 1940. Dr. Walter E. Levy read the Memorial Resolution to Dr. John A. Lanford, as set forth by the Executive Committee.

The Chairman next reported on the Liaison Committee and its membership.

A Clinico-Pathologic Conference was held, at which a case of diabetes was reported by Dr. Sydney Jacobs. Abstract of case follows:

A. B. R., a 33 year old female known for nine years to be a diabetic, was admitted September 5,

1940, apparently suffering from a cold of one week's duration. There had always been trouble in stabilization; she was taking 40 units of regular insulin daily until two days prior to admission when nausea and vomiting began. Her blood CO_2 was 22, but there was no acetonuria. She was treated for diabetic acidosis with infusions and insulin and had apparently recovered from this by the sixth day when her blood CO_2 was 54. Persistent unexplained low grade fever was followed on the fifth day by jaundice, the icterus index gradually rising to 100 by the tenth day. At this time with definite evidence of complete obstructive jaundice, no organic intestinal tract obstruction was visualized. Ascites, dependent edema and pleural effusion developed rapidly; the serum protein was 3.94 and the blood amylase was reported as low. The prothrombin time was markedly elevated until vitamin K was given. Albumin and bile gradually increased in the urine, but the N. P. N. was only 25. She had completely recovered from diabetic acidosis (dextrose 95, chloride 515, CO_2 61) when death occurred on the twelfth hospital day. At postmortem, a most extensive acute necrosis of the liver was noted. The cause of the necrosis is undetermined; there was no known ingestion of any hepatotoxic substance or any history of infectious or metabolic disease to produce it. Possibly there may have been some connection between this and her markedly unstable diabetes, but this can not be proved.

The case was discussed by Dr. Willard R. Wirth. He remarked on the marked hepatitis and decrease in serum protein, with effusion. Dr. Nadler stated that the three most prominent phases of the case were the decrease in prothrombin; second, marked deficiency of serum protein, and third, acidosis.

The second case was presented by Dr. Emile Bloch—Cortical Cell Tumor of the Suprarenal Gland with Metastases to Both Lungs and Both Inguinal Regions. Abstract as follows:

J. B. S., a white male age 56, was first seen on August 30, 1940, complaining of a mass in the right iliac region, adjacent to the pubes with a history of loss of 20 pounds in two months, and anorexia. There was a right inguinal hernia adjacent to the mass. Several digital examinations of the prostate were negative. He was admitted to Touro Infirmary on August 31 with a temperature of 101°, and with a white blood count of 11,000. X-ray report: Area of increased density in pelvic bones, texture relatively normal. Somewhat suggestive of osteoblastic metastatic process, but does not warrant a definite diagnosis. X-ray showed no definite bone pathology. Biopsy of the tissue on September 2 was reported by the pathologist as lipofibroma. (Tissue not taken deep enough to show pathology.) On September 8, Dr. Edgar Burns, in consultation, gave a tentative diagnosis of granuloma inguinale. (Frei test negative.) He further advised excision of inguinal glands on both sides and mass on right side. On September 10, exploration of right inguinal region showed the mass extending deep into the inguinal canal; unable completely to remove same. Pathologic report of frozen section was squamous cell carcinoma, type IV. Further examination of tissue, paraffinized section, thought to be an endothelial tumor of Ewing's type. X-ray of all the bones of the lower extremities showed suspicious growth in the left femur. The operative wound was dressed daily and seemed to heal rapidly. The patient continued to go rapidly down-grade physically, and on September 21, he showed an extravasation of urine into the suprapubic region and scrotum. Therefore, Dr. Burns did a suprapubic cystotomy under local anesthesia with incisions into the scrotum and perineum.

Discussion by Drs. Eshleman and Teitelbaum.

At the conclusion of the Clinico-pathologic Conference, the presentation of papers was begun.

The first, a paper by Dr. Frank Loria, was not presented as he was absent.

The second paper was by Drs. Silverman and Katz, Use of Plasma in the Treatment of Some Gastrointestinal Diseases and Their Complications.

A. Presentation of two cases of chronic ulcerative colitis associated with bleeding and hypoproteinemic stages; and one case of acute gastric hemorrhage characterized by low blood volume and nutritional edema.

B. Preparation, administration, indications and limitations of citrated plasma.

1. Plasma is the cell-free layer of citrated whole blood.

2. It is useful in the treatment of hypoproteinemic states as is seen in gastrointestinal conditions such as protein starvation associated with administration of large amounts of crystalloid solutions; severe liver insufficiency; to replace low blood volume as is found in blood loss associated with hemorrhagic gastritis, bleeding gastric and duodenal ulcer, and ulcerative lesions of the large bowel, in addition to its place in the medical management of postoperative obstructions following gastric surgery.

3. Plasma is easily prepared and can be stored for indefinite periods.

4. It is immediately available without the necessity of cross agglutination.

5. Plasma from AB donors can be given in any amount; the same effect may be achieved by pooling various types of whole blood, adsorbing the agglutinins and aspirating the plasma.

6. Plasma does not replace whole blood; it is a logical adjuvant to the use of the latter achieving its supply from outdated blood.

7. Plasma may be transported for use at any distance while whole blood is subject to hemolysis due to mechanical agitation.

8. Plasma may be administered intramuscularly or subcutaneously as safely and effectively as physiologic saline.

The next presentation was by Drs. Kennedy and Howles, Sarcoidosis in the Negro.

Five cases of sarcoidosis in the negro proved by histologic study are presented. Worthy of note is the absence of a family history of tuberculosis in any of our cases. The reports of others would lead us to believe that the majority of these cases will develop an active form of tuberculosis in the future. The possibility of Mikulicz' disease being a sarcoid is noted, as is the close resemblance of the microscopic picture of Darier-Roussy sarcoid and erythema induratum.

This was discussed by Dr. Sydney Jacobs.

Under the head of Staff Business, the Staff was informed that attendance record would be kept and members would be expected to attend 75 per cent of the staff meetings. This means an attendance of six meetings out of the yearly eight.

The regular monthly meeting of the Medical Staff of the hospital was held on December 11 at 8 p. m. The following program was presented: "Clinico-pathologic Conference" by Dr. Harvey Colvin; "Cholecystectomy" by Dr. Frank L. Loria; "Resection of the Colon in Infants" by Dr. Rawley M. Penick, Jr.; "Multiple Sclerosis" by Dr. L. A. Golden. Miss Ingram and Dr. Hockett discussed general matters pertaining to the hospital.

David R. Womack, M. D., Sec.

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	

AN APPEAL

Fellow members of the Louisiana State Medical Society, are there any indigent physicians in your community who are members of our State Medical Society? If so, do you ever have a desire to extend these poor unfortunates a helping hand to make their road just a bit easier in their declining years? Have you ever thought of a way that you might extend them some help? If we had a sufficient fund in our Society we could help these few unfortunates who have not collected sufficient returns from their meager earnings to provide for themselves in their old age.

Day and night, in sunshine and rain, during the heat of summer and the wintry blasts, just as you and every faithful member of organized medicine, they have freely given their services to the needy sick of their community without a thought of their own future. But alas, when their own day of need overtakes them they are forgotten by their own community and being too proud to appeal for themselves, suffer the pangs of deprivation in silence.

Every year for fifteen years we have gone before the members of this Society in an attempt to establish a fund for the care of our needy members. With an ever increasing number of indigent physicians, organized medicine is annually receiving more demands for assistance from these poor unfortunates who, during their useful, active years, gave freely of their services that their fellow men and women might enjoy good health and their communities be spared the havoc of an epidemic.

There is no more pitiful picture than the aged indigent physician, forgotten and neglected by both his former patients and community. Relief is provided and given to every individual, either direct or through some organization in almost every city or town but the indigent physician is not supposed to exist and does not come under the category of the needy.

If the members of organized medicine wish to provide a fund sufficient to assist the indigent physician, it can and should be done. A fund can be established very quickly if we are willing to increase the annual dues of the Louisiana State Medical Society one dollar per year per member. This would be the simplest plan and would not work a hardship on the individual members; this extra dollar to create a fund for the sole purpose of helping our needy members.

If this plan meets your approval, write to your counselor and member of the House of Delegates, urging him or her to give such a measure their approval at the next meeting of the House of Delegates next April in Shreveport.

The Committee for Care of
Indigent Physicians.

THE COMMITTEE ON MEDICAL PREPAREDNESS

From the latest report from the American Medical Association in regard to the return of questionnaires from the doctors of Louisiana, it is

shown that there is still twenty-nine per cent of the physicians who have not yet answered same. It is desirable that these questionnaires be returned not only for the determination of available medical officers and the status of same but also to ascertain facts from the standpoint of the individual physician. These questionnaires, properly answered, will give the National Committee on Medical Preparedness an indication of the character of service which you wish and are capable of rendering the Government in emergency. Furthermore it is desired to accommodate the doctors, as much as possible, in regard to their preference of duty. Therefore you are doing yourself a great injustice by not sending in the completed questionnaire immediately. The office of the Louisiana State Medical Society at 1430 Tulane Avenue, New Orleans, has available a supply of these forms and you may secure an additional copy if you do not have the original sent you.

We can not too strongly recommend that you give this important function your immediate attention. The doctors of Louisiana have always responded most nobly in such matters in the past and we look forward to a one hundred per cent response to this request. Please do not fail us.

C. Grenes Cole, M. D.,
State Chairman of the American Medical Association Committee on Medical Preparedness.

ADDITIONAL EXAMINING PHYSICIANS FOR DRAFT BOARDS

In the November issue of the Journal there was published a list of examining physicians. The following additional appointments to the various draft boards have been made by Governor Jones. All these physicians have volunteered cheerfully for this work and they are now actively engaged in carrying on the examinations from the several draft boards scattered throughout the State.

Board	Name and Address
Allen	A. D. Mangham, Elizabeth
Allen	Gurdon Buck, Kinder
Allen	E. H. Kent, Oberlin
Ascension	G. Gaudin, Gonzales
Ascension	E. S. Kyes, Dutch Town
Assumption	C. S. Roger, Napoleonville
Assumption	P. M. Payne, Napoleonville
Assumption	W. E. Kittredge, Napoleonville
Assumption	Henry LeBlanc, Paincourtville
Assumption	J. D. Billeaudeaux, Belle Rose
Avoyelles	J. C. Goldner, Marksville
Avoyelles	A. B. Cairns, Bunkie
Beauregard	S. T. Roberts, DeRidder
Beauregard	F. R. Frazar, Merryville
Bienville	Carl Langford, Gibsland
Bienville	V. W. Fletcher, Ringgold
Bossier	H. N. Barnett, Benton
Bossier	D. C. McCuller, Bossier City
Caddo #1	W. F. Drummond, Shreveport
Caddo #1	W. P. Addison, Shreveport
Caddo #2	I. F. Hawkins, Shreveport
Caddo #2	D. R. McIntyre, Shreveport
Caddo #2	G. H. Cassity, Shreveport
Caddo #3	T. J. Smith, Shreveport
Caddo #4	G. H. Robinson, Shreveport
Caddo #4	H. Whitney Boggs, Shreveport
Caddo #5	J. L. Page, Vivian
Caddo #5	T. B. Tooke, Belcher
Calcasieu #1	W. G. Fisher, Lake Charles
Calcasieu #1	T. H. DeLaureal, Lake Charles
Calcasieu #2	W. A. K. Seale, Sulphur
Calcasieu #2	Robert Marshall, Sulphur
Calcasieu #2	P. L. McCreary, Lake Charles
Caldwell	E. L. Carroll, Columbia
Caldwell	L. B. Landry, Columbia
Claiborne	C. W. Phillips, Haynesville
E. Baton Rouge #2	Ashton Robins, Baton Rouge
E. Baton Rouge #2	C. H. Voss, Baton Rouge
E. Baton Rouge #2	John McKowen, B. Rouge
E. Baton Rouge #3	H. W. A. Lee, Baton Rouge
E. Baton Rouge #3	E. V. Whitaker, B. Rouge
E. Baton Rouge #3	B. E. Nelken, Baton Rouge
E. Baton Rouge #3	B. E. Nelken, Baton Rouge
E. Baton Rouge #3	W. B. Singletary, B. Rouge
E. Carroll	D. F. Davis, Lake Providence
Franklin	Sam Carriere, Winnsboro
Franklin	H. T. Rogers, Winnsboro
Franklin	L. F. Robinson, Winnsboro
Grant	J. L. Woodall, Colfax
Grant	D. V. Donaldson, Dry Pring
Grant	N. M. Brian, Montgomery
Grant	J. W. Scott, Rochelle
Jackson	T. A. Dekle, Jonesboro
Jackson	M. M. Hearne, Jonesboro
Jackson	R. U. Parrott, Ansley
Jackson	N. S. Holmes, Chatham
Jefferson #1	C. S. Wood, Algiers
Jefferson #1	Carroll F. Gelbke, Gretna
Jefferson #2	J. Shumard George, Metairie
Jefferson Davis	F. W. Harrell, Jennings
Lafourche	T. B. Ayo, Raceland
Lafourche	J. L. Danos, Thibodaux
Lafourche	J. A. Gravois, Golden Meadows
Lafourche	Guy R. Jones, Lockport
Lafourche	F. T. Beatrous, Thibodaux
Lafourche	A. R. Richard, Thibodaux
Lafourche	O. L. Braud, Thibodaux
Lafourche	R. H. Lolese, Thibodaux
Lincoln	Marvin Green, Ruston
Madison	A. T. Palmer, Tallulah
Madison	D. H. Allen, Tallulah
Madison	W. D. Yerger, Tallulah
Madison	E. O. Edgerton, Tallulah
Madison	D. S. Smith, Mound
Morehouse	Paul Herron, Oak Ridge
Morehouse	W. V. Garnier, Bastrop
Morehouse	C. L. Hope, Oak Ridge
Morehouse	S. I. Sims, Bastrop
Natchitoches	R. S. Roy, Natchitoches

Natchitoches.....W. H. Pierson, Natchitoches
Natchitoches.....R. E. Corkern, Nachitoches

Orleans #1.....Charles Wheeler, New Orleans
Orleans #1.....Bruno Mancuso, New Orleans
Orleans #2.....Shirley Lyons, New Orleans
Orleans #2.....A. T. Ogaard, New Orleans
Orleans #3.....Philip A. Boudreaux, New Orleans
Orleans #4.....Percy A. Phillips, New Orleans
Orleans #5.....C. F. Bellone, New Orleans
Orleans #5.....Frank Gambino, New Orleans
Orleans #6.....J. J. Ciolino, New Orleans
Orleans #6.....Lucien Delery, New Orleans
Orleans #7.....T. T. Batson, New Orleans
Orleans #7.....C. J. Wichser, New Orleans
Orleans #7.....H. T. Beacham, New Orleans
Orleans #7.....Warren L. Rosen, New Orleans
Orleans #9.....E. L. Leckert, New Orleans
Orleans #10.....J. F. Oakley, New Orleans
Orleans #10.....H. G. Butker, New Orleans
Orleans #11.....W. R. Wirth, New Orleans
Orleans #11.....M. W. Miller, New Orleans
Orleans #13.....Gordon Johnson, New Orleans
Orleans #13.....R. D. Stephenson, New Orleans
Orleans #13.....H. B. Alsobrook, New Orleans
Orleans #15.....A. F. Brock, Algiers

Ouachita #1.....Henson Coon, Monroe
Ouachita #1.....John Snelling, Monroe
Ouachita #1.....R. M. Simonton, Monroe
Ouachita #1.....A. G. McHenry, Monroe
Ouachita #1.....J. W. Cummins, Monroe
Ouachita #2.....W. L. Bendel, Monroe
Ouachita #2.....G. W. Wright, Monroe
Ouachita #2.....C. U. Johnson, Monroe

Plaquemines.....B. R. Slater, Bellechaise
Plaquemines.....C. M. Johnson, Buras
Plaquemines.....F. W. Brewer, Port Sulphur

Pointe Coupee.....E. G. Durel, New Roads
Pointe Coupee.....J. M. Mosely, Lakeland
Pointe Coupee.....J. W. Plauche, Sr., Morganza
Pointe Coupee.....J. W. Plauche, Jr. Morganza

Rapides #1.....James W. Welch, Alexandria
Rapides #1.....Rodney G. Masterson, Alexandria
Rapides #1.....C. P. Herrington, Alexandria
Rapides #1.....L. D. Gremillion, Alexandria
Rapdies #2.....B. F. Bremer, Glenmore
Rapides #2.....R. E. McGill, Alexandria
Rapides #2.....W. L. Murrell, Alexandria
Rapides #2.....E. R. Pincus, Alexandria

Red River.....L. S. Huckabay, Harmon
Red River.....W. E. Wilkinson, Coushatta

Richland.....Sheldon Teer, Delhi
Richland.....H. C. Chambers, Rayville

Sabine.....J. K. Phares, Many
Sabine.....H. M. Prothro, Pleasant Hill

St. Bernard.....Felix Planche, Arabi
St. Bernard.....A. V. Filizola, Arabi
St. James.....S. R. Campbell, Hymel
St. Jamee.....H. J. Schmidt, Convent
St. James.....A. J. Nobile, Lutcher
St. Landy #1.....W. R. Lastrapes, Opelousas
St. Landry #1.....G. D. Rackley, Opelousas
St. Landry #1.....Rodney B. Reed, Eunice
St. Landry #2.....Ertemon Lafleur, Opelousas
St. Landry #2.....G. J. Azar, Washington
St. Landry #2.....K. Morrison, Palmetto
St. Landry #2.....L. L. Collins, Port Barre
St. Landry #2.....Gordon Morgan, Melville
St. Landry #2.....L. Lazaro, Opelousas
St. Landry #2.....J. J. Stagg, Eunice
St. Martin.....Louis Weinstein, Breaux Bridge
St. Martin.....S. D. Yongue, Breaux Bridge
St. Martin.....P. H. Fleming, St. Martinville
St. Martin.....A. R. Corne, St. Martinville
St. Mary.....Louis J. Supple, Franklinton

Tangipahoa #2.....C. D. Overton, Hammond
Tangipahoa #2.....M. C. Wiginton, Hammond
Tangipahoa #2.....John Corso, Independence
Terrebonne.....L. S. Fortenberry, Houma
Terrebonne.....Willard Ellender, Houma
Terrebonne.....Roy St. Martin, Houma
Terrebonne.....Ernest Ellender, Houma
Terrebonne.....H. L. Haydel, Houma

Union.....C. C. Colvin, Bernice
Union.....C. C. Francis, Farmerville
Union.....J. G. Norris, Farmerville
Vermilion.....J. E. McClellan, Abbeville
Vernon.....E. M. Shaw, Leesville
Washington.....H. A. Stafford, Franklinton
Webster.....W. C. Gray, Springhill
Webster.....C. M. Baker, Minden
Webster.....R. E. Smith, Minden
Winn.....J. F. Faith, Winnfield
Winn.....John T. Mosely, Winnfield
Winn.....S. B. Matthews, Winnfield

It has been found advisable in addition to the list of consultants recomemnded by the Selective Service Headquarters in Washington, to obtain the assistance of urologists on the Medical Advisory Boards. The names of the physicians who have volunteered for this service, together with their assignments, are listed below: New Orleans Board #1, John Menville; #2, Eugene Vickery; #3, H. W. E. Walther; Baton Rouge Board #4, U. S. Hargrove; Lake Charles Board #6, C. O. Frederick; Alexandria Board #7, M. H. Foster; Monroe Board #8, J. W. Murphey; Shreveport Board #9, Dudley Youman.

OUACHITA PARISH MEDICAL SOCIETY

The annual meeting of the Ouachita Parish Medical Society was called to order at 7:00 p. m. at the Virginia Hotel by Dr. D. T. Milam, President, on the night of December 5.

Thanks were returned by Dr. G. M. Snellings.

The application of Dr. J. H. Parrott for membership was called upon for report by the Membership Committee. None of the members being present, it was moved by Dr. Wright, seconded by Dr. Hunter that Dr. Parrott's application for

membership by reciprocity be accepted. This was carried unanimously.

The report of the President was given by Dr. D. T. Milam.

The report of the Secretary-Treasurer was read. It was moved by Dr. Wolff, seconded by Dr. G. M. Snellings that this report be accepted. This was carried.

The President declared that nominations for officers for 1941 were now in order and that nominations for President would be received. Dr. A. E. Fisher nominated Dr. Henson S. Coon. This was seconded by Dr. Wolff. Dr. C. H. Mosely nominated Dr. Joseph P. Brown. This was seconded by Dr. Hunter. Dr. Pankey moved that nominations be closed. This was seconded by Dr. G. M. Snellings. Voting was done by secret ballot and Dr. Henson S. Coon was elected President.

Nominations were then declared open for Vice-president. Dr. Hamilton nominated Dr. L. L. Titche. This was seconded by Dr. Pankey. Dr. Gallaspy moved that the nominations be closed. This was seconded by Dr. Cummins. Dr. Titche was declared elected Vice-President unanimously.

Nominations were then declared open for Secretary-Treasurer. Dr. Pankey nominated Dr. J. W. Cummins. This was seconded by Dr. G. M. Snellings. Dr. Hamilton moved that the nominations be closed. This was seconded by Dr. Mc Henry; Dr. J. W. Cummins was declared elected Secretary-Treasurer unanimously.

Nominations were then declared open for Delegate for 1941-42 to replace Dr. F. C. Bennett. Dr. Gray, Jr., moved that Dr. Bennett be re-elected and this was seconded by Dr. Wolff. Dr. G. M. Snellings moved that the nominations be closed. This was seconded by Dr. Cummins. Dr. F. C. Bennett was elected delegate for 1941-42 unanimously.

Nominations were then declared open for Alternate for Dr. F. C. Bennett for 1941-42. Dr. Gray, St., moved that Dr. D. M. Moore he re-elected and this was seconded by Dr. Wolff. Dr. Hamilton moved that the nominations be closed and this was seconded by Dr. Coon. Dr. D. M. Moore was elected alternate for Dr. F. C. Bennett for 1941-42.

Dr. Milam then introduced Dr. J. E. Walsworth, Chairman of the Committee on Arrangements for the R. W. Faulk meeting.

Dr. Walsworth then introduced the following guests: The daughters of Dr. Faulk: Mrs. Bland, Mrs. Fluker, and his grand-daughter, Miss Reddick; the Acting President of the Auxiliary to the Ouachita Parish Medical Society, Mrs. R. W. O'Donnell; the Secretary of the Auxiliary to the Ouachita Parish Medical Society, Mrs. Henson S. Coon, and their guest, Mrs. Brown.

The guests from the surrounding parish medical societies were: Dr. Mecom from Franklin, Dr. Taylor from Union, and Dr. Leavell from Morehouse.

Dr. Walsworth then asked Dr. C. P. Gray, Sr., to present the plaque to Dr. R. W. Faulk and Dr. Faulk responded. Dr. Walsworth then read congratulatory messages to Dr. Faulk. Dr. Walsworth introduced Dr. J. Q. Graves and Dr. Graves introduced Dr. J. T. Nix of New Orleans who delivered the address to Dr. Faulk. Dr. Walsworth thanked Dr. Nix and returned the meeting to Dr. Milam.

Dr. Milam introduced the new president. Dr. Henson S. Coon and turned the meeting over to him.

J. W. Cummins, M. D., Sec.

BI-PARISH MEDICAL SOCIETY

After a bounteous repast in the dining room of the Rist Hotel, Society was called to order for the business and the scientific program.

Officers for 1941 elected:

Dr. W. J. Roberts.....President
Dr. T. H. Pargen.....Vice-President
Dr. E. M. Toler.....Secty. Treasurer
Dr. C. S. Toler.....Delegate
Dr. E. M. Robards.....Alternate

On motion Drs. Toler, Shaw and Robards appointed to draft resolutions relative to the death of Dr. C. S. Miller. Scientific program by Drs. Cecil Lorio and J. J. Robert, Baton Rouge and Dr. C. Grenes Cole, of New Orleans. Subjects: "Allergy of Childhood," "Business Side of the Profession," and "Menace of Socialized Medicine." All three papers were discussed favorably by members present. A vote of thanks was extended to Drs. Lorio, Robert, and Cole for the presentation of their excellent papers.

E. M. Toler, M. D., Sec.

NEW OFFICERS
1941

BEAUREGARD PARISH

President: Dr. J. D. Frazar, DeRidder.
Vice-President: Dr. T. R. Sartor, DeRidder
Secretary-Treasurer: Dr. S. T. Roberts, De Ridder

CADDO PARISH

President: Dr. T. B. Tooke, Belcher
First Vice-President: Dr. C. R. Gowen, Shreveport
Second Vice-President: Dr. Harold J. Quinn, Shreveport
Secretary: Dr. Willis J. Taylor, Shreveport
Treasurer: Dr. W. R. Harwell, Shreveport

DESOTO PARISH

President: Dr. W. B. Hewitt, Mansfield
Vice-President: Dr. R. P. Thaxton, Mansfield
Secretary-Treasurer: Dr. R. A. Tharp, Mansfield

OUACHITA PARISH

President: Dr. Henson S. Coon, Monroe
Vice-President: Dr. L. L. Titche, Monroe
Secretary-Treasurer: Dr. J. W. Cummins, Monroe

RAPIDES PARISH

President: Dr. M. B. Pearce, Alexandria
First Vice-President: Dr. R. E. McGill, Alexandria
Second Vice-President: Dr. Morris Hair, Bunkie
Secretary-Treasurer: Dr. C. P. Herrington, Alexandria

RED RIVER PARISH

President: Dr. W. B. Hunter, Coushatta
Vice-President: Dr. Jack Carlisle, East Point
Secretary-Treasurer: Dr. C. W. Reid, Coushatta

EAST BATON ROUGE PARISH

President: Dr. W. S. Slaughter, Baton Rouge
Vice-President: Dr. B. B. Lane, Jr. Baton Rouge
Secretary-Treasurer: Dr. R. C. Kemp, Baton Rouge

LAFOURCHE VALLEY MEDICAL SOCIETY

The regular meeting of the Lafourche Valley Medical Society was held in Raceland on December 18. Dr. Francis LeJeune of New Orleans presented a paper on "Hoarseness" with a moving picture demonstration; Dr. Leo Kerne of Thibodaux spoke on "Diseases of the Biliary Tract."

S. C. Collins, M. D., Sec.

THE BULLETIN OF WAR MEDICINE

Developments of the war during the last year have made it very difficult to obtain Medical Journals from Europe. In order that information of the valuable work being done should be available to the medical profession, the Medical Research Council has arranged for the publication of abstracts and summaries of all relevant modern literature on the subjects considered.

Medical experiences arising from the present war have not as yet been largely reported, but papers are appearing in this literature in steadily increasing numbers, and it is proposed, if circumstances permit, to issue the Bulletin every two months.

NEWS ITEMS

The French Hospital has revamped and re-equipped the main operating room of the institution. The changes include the installation of new anesthesia apparatus, new Mont R. Reid operating table and other changes. The organization, under the leadership of Mr. Octave Garsaud, president, has also made extensive improvements in other departments.

The third annual Congress on Industrial Health, sponsored by the Council on Industrial Health of the American Medical Association, will be held January 13-14, 1941, at the Palmer House, Chicago. A splendid list of speakers has been arranged for this meeting which should be of interest to any physician engaged even remotely in the practice of industrial medicine.

A full time nose and throat man is wanted for institutional work in Louisiana. This job will pay $300 a month, plus subsistence. For informaiton apply to the office of the Journal.

FORUM ON ALLERGY

The third annual Forum on Allergy will be held at Indianapolis, headquarters, the Claypool Hotel, on January 11-12, 1941. This meeting has been held annually for several years in order to review the progress of clinical allergy; it appeals to the internist, dermatologist, otolaryngologist and physicians in other branches of clinical medicine. An excellent program has been prepared.

HEALTH OF NEW ORLEANS

The Bureau of the Census, U. S. Department of Commerce, reports that for the week which terminated November 16 there were exactly the same number of deaths in the City of New Orleans as during the previous week; to wit, 160, divided 99 white and 61 negroes, with 30 deaths in children under one year of age, 16 of which were colored babies. By a strange coincidence, for the third successive week there were exactly 160 deaths in the city, this week one more in the white and one fewer deaths in the negro as contrasted with the previous week. For the week which closed November 30 the deaths dropped to 134, apportioned 76 white and 58 negro; infants 13, white seven and negro six. There was a slight increase for the week which filled the first seven days of December. Of the 145 deaths occurring in this week, 96 were in the white and 49 in the negro population; 17 infants died in this time period of whom 10 were white and seven negro.

INFECTIOUS DISEASES IN LOUISIANA

The morbidity report of the Bureau of Epidemiology of the Louisiana State Board of Health for the week ending November 23 showed that syphilis, as is its customary habit, stood at the head of the list of reported diseases with 145 cases. In numbers greater than ten, the following diseases were reported with their incidences: 53 cases of malaria, 43 of gonorrhea, 33 of trachoma, 31 of pulmonary tuberculosis, 26 of cancer, 23 of pneumonia, and 20 of whooping cough. Of the rarer diseases four cases of typus fever were found, one each in Calcasieu, East Baton Rouge, Iberia, and Vermilion parishes. A patient with tularemia was discovered in Allen Parish. The following week, the week ending November 30, there were reported 157 cases of syphilis, 27 each of pulmonary tuber-

culosis and gonorrhea, 22 of trachoma, 20 of cancer, 19 of diphtheria, 18 of pneumonia, and 15 of scarlet fever. During this week three cases of typhus fever were reported from New Orleans, and five of poliomyelitis were discovered, one each in Caddo, Orleans, and Vermilion and two in Richland. The excellent record of the previous week was not sustained for the first week in December although on the whole the reported diseases were at a low rate. These diseases appeared in double figures: 118 cases of syphilis, 37 of pneumonia, 33 of gonorrhea, 32 of influenza, 31 of cancer, 25 of pulmonary tuberculosis, 13 of typhoid fever, 10 each of trachoma and diphtheria. The one case of poliomyelitis reported this week occurred in Caldwell Parish. There were four cases of typhus fever from Orleans, and one each from Avoyelles and LaSalle Parishes.

IN MEMORY OF CHARLES SIMS MILLER

At the regular meeting of the Board of Administrators of the East Louisiana State Hospital held on November 19, 1940, the following resolution was unanimously adopted:

The members of the Board of Administrators wish to record their profound sorrow at the death of their superintendent, Dr. Charles Sims Miller, on Thursday, November 7, 1940.

Dr. Miller devoted twenty-six years of his life to the ministering of the patients of this Hospital, which he loved so profoundly.

The members of the Board wish to express their appreciation of the valuable service he rendered, and their personal admiration for his sincerity, loyalty of purpose and high sense of honor and justice. His sympathetic kindness and unfailing generosity inspired all those who knew him, on whom his death has left the feeling of deep sorrow.

The members of this Board desire to extend their deepest sympathy to the members of his family, and direct that a copy of this resolution be sent to them. They also direct that copies be sent the local paper, the Sixth District Medical Society, and the Louisiana State Medical Society.

WOMAN'S AUXILIARY
Louisiana State Medical Society

President—Mrs. Roy Carl Young, Covington.

President-elect—Mrs. Aynaud Hébert, New Orleans.

First Vice-president—Mrs. Joseph E. Heard, Shreveport.

Second Vice-president—Mrs. W. A. Ellender, Houma.

Third Vice-president—Mrs. M. H. Foster, Alexandria.

Fourth Vice-president—Mrs. C. P. Gray, Monroe.

Treasurer—Mrs. M. C. Wiginton, Hammond.

Recording Secretary—Mrs. P. A. Donaldson, Reserve.

Corresponding Secretary—Mrs. Herbert Cannon, Covington.

PRESS AND PUBLICITY
ANNUAL REPORT 1939-1940

During the year the following reports and news items from the state auxiliaries have been published in the New Orleans Medical and Surgical Journal.

JUNE, 1939

List of State Officers

Convention News—Report of State Convention, April 24-26, 1939, held in Alexandria, by Mrs. S. Chaillé Jamison, Delegate from Orleans Parish.

President's Message—Greeting to Auxiliary members by the incoming President, Mrs. S. M. Blackshear, New Orleans.

JULY, 1939

List of State Officers

National Auxiliary Letter—A complete account of the meeting of the Woman's Auxiliary to the American Medical Association, beginning May 15, 1939, in St. Louis. Reported by Mrs. Frederick G. Ellis, Past President State Auxiliary, Shreveport.

National Exhibits—Description of exhibits sent by each state to the National Convention in St. Louis. Reported by Mrs. Clifford P. Rutledge, President, Caddo Parish Auxiliary, Shreveport.

AUGUST, 1939

List of State Officers

National Auxiliary Legislation—Complete report of the Committee on Legislation of the Woman's Auxiliary to the American Medical Association. Reported by Mrs. Arthur A. Herold, Chairman, Shreveport (read at the A. M. A. meeting in St. Louis, May, 1939).

SEPTEMBER, 1939

The names and addresses of all members of the Board of the Woman's Auxiliary to the Louisiana State Medical Society.

OCTOBER, 1939

List of State Officers

Announcement of meeting of the Woman's Auxiliary to the Southern Medical Association, November 21-24, 1939, in Memphis, Tenn.

List of Officers and Chairman of Standing Committees of the S. M. A.

Iberville Parish—Report of meeting in Plaquemine, and money raised for donation to the Plaquemine Sanitarium ($200). Auxiliary has eleven members.

NOVEMBER, 1939

List of State Officers

Caddo Parish—Report of meeting in Shreveport, attended by Mrs. S. M. Blackshear, State President. Report by Mrs. N. Judson Bender, Shreveport.

Orleans Parish—Report of meeting in New Orleans, attended by Mrs. Roy Carl Young, President-elect of State Auxiliary. Reported by Mrs. Edwin R. Guidry, New Orleans.

Ouachita Parish—Report of meeting in Monroe, attended by Mrs. S. M. Blackshear, State President. Reported by Mrs. J. W. Cummins, Monroe.

Lafayette Parish—Report of meeting and election of officers, held in Lafayette, attended by Mrs. S. M. Blackshear, State President.

Second District—Report of meeting in Norco, attended by Mrs. S. M. Blackshear, State President, and Mrs. Roy Carl Young, President-elect.

DECEMBER, 1939
List of State Officers

Plans for the Auxiliary—A message from the President of the Woman's Auxiliary to the American Medical Association, Mrs. Rollo K. Packard, Chicago.

Education in Regard to Tuberculosis—Report of educational work done by the Orleans Parish Auxiliary. Reported by Mrs. H. B. Gessner, Chairman.

In Regard to Public Relations—A letter to the presidents of parish auxiliaries, throughout the state, urging them to hold open meetings, inviting outside guests, when the subject of state medicine would be discussed by a doctor qualified to do so. Suggestion made by Mrs. S. M. Blackshear, State President. Letter by Mrs. F. Creighton Shute, Chairman of Public Relations, State Auxiliary.

Calcasieu Parish—Report of meetings and projects carried on, meetings held each month in Lake Charles. Reported by Mrs. G. E. Barham, Lake Charles.

Rapides Parish—Report of meeting in Alexandria, attended by Mrs. S. M. Blackshear, State President. Reported by Mrs. H. Aubrey White.

JANUARY, 1940
List of State Officers

Letter from State President—Letter from Mrs. S. M. Blackshear further explaining the need for open meetings at which the subject "Why the Medical Profession is Opposed to the Wagner Bill and Similar Legislation," would be discussed by some qualified doctor.

Caddo Parish—Report of meeting in Shreveport, and projects carried on during Christmas, also entertainment of medical society. Reported by Mrs. N. Judson Bender, Shreveport.

Ouachita Parish—Report of meeting in Monroe, 6—Med. Jour.—La. State Med. Soc. News—Carson of parish medical society. Reported by Mrs. J. C. Cummins, Monroe.

Notes on the Southern Medical Meeting—A complete account of the meeting of the Woman's Auxiliary to the Southern Medical Association, held in Memphis, Tenn. Reported by Mrs. Wiley R. Buffington, New Orleans, Councilor for Louisiana.

FEBRUARY, 1940
List of State Officers

State Medicine—An editorial taken from the New Orleans Medical and Surgical Journal, a comprehensive explanation.

Orleans Parish—The report of the past year's work under the leadership of Mrs. C. Grenes Cole, and the names of officers who will serve for the following year. Reported by Mrs. Edwin R. Guidry, New Orleans.

Tangipahoa Parish—Report of meeting in Hammond, and the progress which this auxiliary is making. Reported by Mrs. M. C. Wiginton.

MARCH, 1940
List of State Officers

The Annual Convention—Announcement of the State Convention to be held in New Orleans, April 22-24, also names of Chairman of Committee on Arrangements, with program of meeting. Reported by Mrs. James W. Warren, General Chairman.

Orleans Parish—Report of meeting in New Orleans and taking over of new officers, Mrs. Aynaud F. Hébert, President. Reported by Mrs. D. C. Browne, Chairman of Press and Publicity.

Ouachita Parish—Report of meeting in Monroe, and plans for "Doctors' Day." Reported by Mrs. J. W. Cummins, Monroe.

Talks on Wagner Bill—Report that open meetings, with talks on state medicine, will be held in St. Landry, Caddo, and Washington parishes. Reported by Mrs. F. C. Shute, Chairman of Public Relations Committee, State Auxiliary.

APRIL, 1940
List of State Officers

Caddo Parish—Report on open meeting; about 300 people attended. Dr. John H. Musser, New Orleans, spoke on, "The Problems of State Medicine and How the Doctor Looks at Them." Reported by Mrs. N. J. Bender, Shreveport.

Calcasieu Parish—Report of meeting in Lake Charles, attended by Mrs. S. M. Blackshear, State President. This auxiliary will also hold an open meeting on state medicine soon.

Orleans Parish—Report of meeting in New Orleans, also plan for coming State Convention, given by Mrs. J. W. Warren, General Chairman.

St. Tammany Parish—Report of meeting in Covington, attended by Mrs. S. M. Blackshear, Mrs. Walter D. Simmons, President.

Terrebonne Parish—Report of meeting in Houma, Mrs. S. M. Blackshear, State President attending the meeting. Mrs. S. F. Landry, President.

Second District—Report of meeting in Norco, Mrs. S. M. Blackshear, State President attending. Mrs. J. Earl Clayton, President.

New Auxiliaries—Mrs. Erwin L. Gill, Organization Chairman for the State Auxiliary, announces the organization of two new auxiliaries: Beaure-

gard Parish, President, Mrs. J. D. Frazar, of De-Ridder; and Lafourche Parish, President, Mrs. Leo Kerne, of Thibodaux.

MAY, 1940

Annual Report of State President—The report of Mrs. S. M. Blackshear, State President of the Woman's Auxiliary to the Louisiana State Medical Society, will be published in this issue.

This report is not complete without making some mention of reports sent to the National Press and Publicity Chairman, and the general publicity given to the newspapers before and during our state convention.

Respectfully submitted,
Mrs. Edgar Burns,
Chairman, Press and Publicity.

April 22, 1940.

Respectfully submitted,
MRS. JONAS W. ROSENTHAL,
Press and Publicity Chairman.

BOOK REVIEWS

Medicolegal and Industrial Toxicology, Criminal Investigations, Occupational Diseases: By Henry J. Eilmann, Ph. D. Philadelphia, The Blakiston Company, 1940. Pp. 324. Price $3.00.

According to the introduction this book had its origin in a personal appreciation of the medicolegal problems in two new (?) fields, the chemical and dye industries. Accordingly in this single volume the author has undertaken to incorporate "those subjects which may be encountered frequently by the coroner, industrial physician, lawyer, insurance adjustor, laboratory expert and others."

Of the total space, 17 pages are then given to industrial poisoning, and 2 to occupational diseases. The discussions of criminal investigations and of medicolegal examinations are more extensive. There is a classification of drugs and poisons with brief outlines of their actions and of methods for separation and identification. Occasional serious errors of fact occur in this material, as for example, page 55; "Unlike hyoscyamine, atropine is eliminated principally by the kidneys." Condensation of material has been carried to the complete elimination of any references, even to the larger manuals. A section on the identification and determination of sulfanilamide in the urine is included, but one looks in vain for reference to the glycols.

The inadequacy of the discussion of industrial poisons can best be illustrated by quoting the section on chlorine derivatives: "The chlorine derivatives of the fatty series used in industry are tetrachlorethane, a powerful solvent for cellulose acetate, and tetrachlormethane, commonly called tetrachloride, used principally in fire extinguishers. The former is quite toxic and has resulted in many cases of toxic jaundice, whereas the latter is more irritant to the respiratory tract. Severe bronchitis with subsequent broncho-pneumonia has followed the use of this fire extinguisher in an enclosed place. It is also used extensively as a solvent for sulphur monochloride, used in vulcanizing the inner tubes of automobile tires. Vulcanizers often complain of an irritation of nose and throat."

This reviewer can not recommend the book.

ERWIN E. NELSON, M. D.

A Manual of Otology, Rhinology and Laryngology: By Howard Charles Ballenger, M. D., F. A. C. S. Philadelphia, Lea & Febiger, 1940. Pp. 302. Price $3.75.

This book briefly and concisely covers the greater part of the problems confronting the otolaryngologist. It is written in a pleasing style, is an excellent book for the undergraduate student, and is a handy reference for the general practitioner. It is well illustrated, and the discussions of the various phases of otolaryngology are adequate for all except the specialist.

F. E. LEJEUNE, M. D.

Dr. Colwell's Daily Log for Physicians: Colwell Publishing Company, Champaign, Illinois, 1940. Price $6.00.

This system of financial accounts furnishes the physician with an easy means of bookkeeping. Transactions are entered day by day, and records for the month and for the year are thereby secured which comprise all the figures essential for monthly statements and for the filing of income tax returns. This year's Log also gives valuable information as to what items are deductible as professional expense.

Physicians who use the Log faithfully each day will find that it simplifies the task of keeping the necessary financial records.

PHILIP H. JONES, JR., M. D.

Chemotherapy and Serum Therapy of Pneumonia: By Frederick T. Lord, M. D., E. S. Robinson, M. D., Ph. D., and Roderick Heffron, M. D. New York, Commonwealth Fund, 1940. Pp. 174. Price $1.00.

An excellent handbook on the diagnosis and treatment of the various forms of pneumonia, it is meant to replace the manual "Pneumonia and Serum Therapy" by Lord and Heffron. It discusses fully the use of sulfapyridine and brings up to date the information concerning serum therapy. It is concise, practical and authoritative.

I. L. ROBBINS, M. D.

Legal Guide for American Hospitals: By Emanuel Hayt, LL.B., and Lillian R. Hayt, M. A., J. D. New York, Hospital Textbook Co., 1940. Pp. 608.

The authors have added to the libraries of hospital administrators and staff physicians a comprehensive work covering in a large degree the status of legal medicine as it affects hospital practice today.

As is well known, the legal status of the nonprofit hospital varies greatly according to the state in which it is situated. The authors have made no attempt to lay down a guide for individual states but use the mechanism of citing decisions which the administrator can use as a guide in determining his procedure in most individual cases. It, of course, in no way takes the place of local legal advice which is as necessary as ever because of the constantly changing shifts in legal opinions.

It is to be hoped that there will be enough demands for a work of this kind so that additions will keep it up to date as previous books on hospital law have become obsolete a very short time after they were printed.

A. J. HOCKETT, M. D.

Injection Treatment: By Penn Riddle, M. D. Philadelphia, W. B. Saunders Company, 1940. Pp. 290. Price $5.50.

This book includes a discussion of many subjects amenable to injection treatment such as hernia, hydrocele, ganglion, hemorrhoids, prostate gland, angiomas, varicocele, varicose veins, bursae and joints.

The popularity of the injection treatment dates back more than a hundred years. As the science of surgery progressed the injection treatment found fewer adherents to this method. It seems to be the author's impression that the pendulum is swinging back as we find a number of men who think well of the results obtained following injection treatment.

The book is well written and contains a rather complete bibliography. The author has attempted to present an unbiased view of the subject stressing the fact that "only certain cases are suitable for injection." The chapters which include the injection treatment of joints, angiomas and the prostate gland were very brief and contained a short bibliography. Perhaps it would have been better to omit these subjects entirely. The injection treatment of varicocele, ganglion and hydrocele were discussed in like manner. The largest portion of the book included a discussion of hernia, hemorrhoids and varicose veins. The importance of some type of ligation is stressed along with the injection of varicose veins. There are a few cases of hemorrhoids and hernia which satisfactorily respond to the injection treatment.

No mention was made about the following fact: Any injection treatment is essentially a surgical procedure. Inasmuch as the injectioner should be prepared to meet all complications which arise, it should be carried out by men trained in surgery and surgical technic. A surgeon who is equally equipped to carry out the operative or injection type of treatment will rarely find it difficult to decide the procedure most suitable in the individual case.

The real danger of all injection treatment is the apparent ease of administration which appears favorable to men untrained in surgical technic, the "so called injectionists." Obviously they are in no position to meet the complications which may arise.

Those men always find multifarious reasons for the injection treatment as preferable to surgery, usually omitting the best reason of all, namely; they are not adequately qualified to perform the surgical task or assume the risk of complications involved.

It would appear that the injection treatment has a definite place, but it seems to be limited to a relatively few cases. It will take a few years of trial and error, and further evaluation of results to determine its place in medicine. In the end, it will probably be the surgeon who is best qualified to render a decision. His response probably will be as follows: Yes, the injection treatment is indicated in only a few conditions and of these the cases selected are very few and far between.

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